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OBSERVATIONS ON HYDATID DISEASE IN THE DOMESTIC HERBIVORA (*ECHINOCOCCUS MULTILOCULARIS*) AND ITS RELATIONSHIP WITH *ECHINOCOCCUS ALVEOLARIS*.

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Introduction.

HYDATID disease is extremely common in the domestic animals in Australia. The sheep especially acts as the common intermediate host of the parasite and dogs are infested through ingesting affected viscera from this source. There is no doubt that great laxity occurs in many slaughter yards, farms and elsewhere with regard to the disposal of cyst-bearing viscera and in the country districts probably all dogs sooner or later become carriers of the adult *taenia*.

It is very difficult to arrive at the exact incidence among the domestic herbivora. Observers at the

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Melbourne Municipal Abattoirs state that about 40% of all sheep slaughtered harbour hydatid cysts, while animals from certain parts of Victoria, such as the Wimmera and far western districts, may have as high a percentage of infestation as 75%. Even in lambs from these districts the incidence is high.

In oxen the proportion is much lower, but in old cattle which have been bred and pastured in Victoria, hydatid disease is found in about 30%. The cysts of the ox are often sterile or degenerated and this animal cannot be looked upon as a suitable intermediate host for the parasite.

Aetiologically the sheep is the important intermediate host. There seems to be no doubt that all the domestic herbivora in Victoria are infected from the same source—the dog, which sheds the mature ova in thousands on grass and in water.

The occurrence of hydatid disease in man in all countries is dependent upon the number of sheep pastured. Iceland for long has been famous as a sheep breeding country and notorious for the frequency of hydatid disease. This was due to the

ignorance of the peasants, their insanitary dwellings and intimate contact with dogs. Sambon,⁽¹⁾ however, states that owing to legislation and education in hygienic matters the incidence of the disease has been reduced from one in forty to one in two thousand during the last twenty years.

Australia with the exception of Queensland has had a high incidence of hydatid disease which increased with the growth of the sheep breeding industry. Now, thanks to better education and hygienic improvements, the disease is becoming less frequent. In the South American republics (Argentina, Uruguay) the disease is on the increase and Carbonell and Zwanck⁽²⁾ have shown that this has closely followed the increase of the number of sheep in those countries. Here ideal conditions exist for the spread of this disease—large flocks of sheep, sheep dogs, an ignorant native peasantry and a precarious water supply. The veterinary authorities of the Argentine have realized the economic loss due to this cause and are endeavouring to arrest it by propaganda and legislation. In Algiers and other parts of North Africa and in New Zealand the disease is relatively common since the same aetiological factors exist there. It is almost certain that the increase of the number of sheep pastured in South Africa and the United States of America will be followed by the spread of the disease and a corresponding rise in its incidence in human beings will occur unless due precautions are taken.

Nomenclature.

In the herbivora the larval form of the parasite takes various forms, some of which differ considerably from those found in man. In man and in the sheep the typical parasite is a unilocular cyst which in the former frequently, but in the latter rarely contains daughter cysts. This form is designated *Echinococcus polymorphus*.

In the ox all observers have been struck by the frequency of complicated multicystic and multiloculated forms. To these the name *Echinococcus multilocularis* has been given and is descriptive of their morphology. Unfortunately it had been applied to a rare form of hydatid disease found in man, which occurs only within comparatively narrow geographical limits. It is practically confined to the mountainous parts of middle Europe—Bavaria, the Tyrol and Serbia in particular. It has with the exception of the isolated cases recorded in South America by Wernicke and Ayerza⁽³⁾ never been observed in those countries where hydatid disease is so common. Though it shows undeniable histological differences from the truly multilocular form found in the ox, a great deal of confusion has originated among pathologists and clinicians. Dévé,⁽⁴⁾ to whom we are indebted for a careful comparison of the two lesions, recognized the confusion that existed. For the rare human form he first proposed the name *Echinococcus bavarotyrolienne*, but later designated it *Echinococcus alveolaris*. This name is now generally accepted. Most of the confusion has resulted from insufficient histological examination. Ramsay Smith⁽⁵⁾ described typical

multiloculated cysts of the sheep which he erroneously regarded as identical with the rare alveolar form. Corlette⁽⁶⁾ described a multilocular hydatid of the lung which was associated with a hydatid of bone, and put forward arguments in favour of the unity of the echinococcal species. There appears to be no doubt from his description that the lesion, although multilocular, was not identical with the true alveolar form.

As a result of the occurrence of these various morphological forms even in the same host the question of the existence of two distinct parasites arose and unanimity has not yet been reached on this vexed question. Clunies Ross⁽⁷⁾ has discussed the problem and the necessity of arriving at some definite conclusions as regards nomenclature and I agree with him that the name which best describes its morphology, should be used irrespective of the unity or the duality of the parasite. The present paper is a study of the various morphological forms and an attempt to arrive at some general conclusions with regard to their aetiology. In it the following nomenclature will be used:

1. *Echinococcus polymorphus* (unilocular or pouched), typical of the sheep and man.

2. *Echinococcus multilocularis*, typical of the ox.

3. *Echinococcus alveolaris*, a very rare form found in man with a narrow geographical distribution;

Hydatid Disease in the Sheep.

A great number of varieties of cyst are met with and very often several varieties occur in the same animal or in the same organ. Multiple infections are the rule and sometimes truly massive infestations are present. The liver and lung are most frequently affected, the relative proportion being lung 52% and liver 42%. In spite of the variety of forms the cysts fall into the following groups:

1. Simple univesicular cysts.

2. Multilocular cysts with many characteristic pouches.

3. Multicystic masses of small separate cysts.

Simple Univesicular Cysts.

Simple univesicular cysts are extremely common and must be regarded as typical of the parasite which has reached its optimal development. They resemble in every detail except size the typical unilocular cyst found in man. They are frequently multiple and are sometimes associated with pouched and compound cysts (see Figure I.).

They rarely exceed ten centimetres in diameter even in old sheep and in animals of one to two years they vary from three to six centimetres in diameter. They are roughly spherical, although some degree of pouching is common. This seems to be determined by the presence of relatively resistant portions of the surrounding tissues. In some cases the cyst encroaches upon the serous covering of the organ and peculiar semi-pedunculated cysts may appear owing to growth taking place in the path of least resistance. In other cases the great variation in size is probably due to infestations at different ages and in multiple

infestations the cysts may be crowded together so that partial fusion, herniation of one cyst into another or disproportionate growth of contiguous cysts may give rise to peculiar appearances. Endogenous daughter cyst formation which is so typical of human cysts, is extremely rare and I have noticed it only in three cases in all of which some abnormal condition was present. In one a small patent bronchus involved the adventitia and in two slight biliary contamination of the cyst had occurred and caused protective daughter cyst formation.

Multiloculated Cysts.

In many univesicular cysts there is an indication of the development of pouches which increase with the age of the parasite. They are more common in the lung than in the liver. The loculi vary in size from a few millimetres to several centimetres in diameter, are separated by incomplete septæ and so communicate with a common cavity. Sometimes loculi become completely shut off from the main cavity and sometimes part of the lesion may be composed of congeries of small cysts, resembling exactly the next type to be described.

The parasite in both these forms has a well marked laminated layer which is pearly white in colour and resembles that seen in human cysts. Its thickness varies probably with the age of the cyst. The contained fluid is clear and as a rule even small cysts are fertile, the inner layer being studded with numerous brood capsules containing scolices. The number of brood capsules and scolices may be enormous and it would seem that in this animal the parasite finds its ideal host. Degeneration is not common, but in some of the multiloculated forms there may be spaces filled with caseous débris and crumpled laminated membrane. Suppuration too is rare and is most commonly seen in the lung in which a patent bronchus leads to the cyst. It is not uncommon to find dead, collapsed cysts in communication with patent bronchi and expectoration with natural cure of pulmonary hydatid cysts is apparently frequent in the sheep.

The cellular reaction appears to resemble closely that found typically in man. No doubt in the earliest stage there is an intense cellular reaction with characteristic eosinophile and endothelial cells, but even in small cysts the inner layer rapidly becomes acellular and avascular. Hyaline change takes place and the layer becomes extremely dense, almost as firm as cartilage and relatively thicker and denser than in human cysts. On the inner surface between it and the laminated layer of the parasite yellowish, caseous débris is sometimes found deposited in an irregular manner. This is apparently derived from the inner layer of the adventitia by a process of quiet necrosis and fatty change. The outer layers of the adventitia are composed of concentrically arranged connective tissue cells which gradually merge into the surrounding tissues. In this region there may be a narrow zone of small round cells of lymphocytic type.

This reaction of the tissues of the host is a very striking and early feature and it would seem that the dense sclerosis of the adventitia tends to prevent the symmetrical progressive enlargement of the parasite and, therefore, not only limits the size of the cyst, but often precludes the involvement of natural channels and resultant protective daughter cyst formation. As the parasite ages this adventitia becomes thicker and denser and in the multi-loculated forms may be so well differentiated from the surrounding tissues that enucleation may be possible. The septæ in these cysts are extremely rigid and are composed of dense unorganized hyaline material. Irregular calcareous deposition is common.

As is to be expected in these types there is some interference with the passage of nutritive substances, so that caseous degenerative changes of the inner layer of the adventitia and of the parasite are commoner than in the simple cysts.

Multicystic forms of the parasite occur rarely in the sheep and do not reach the degree of development seen in the ox. They occur in both liver and lung, are not infrequently seen in association with simple types and take the form of congeries of small cysts embedded in a dense fibrous connective tissue stroma. The cysts are uniform in size and relatively small, rarely reaching more than a few millimetres in diameter. They have well developed laminated coats, a relatively small quantity of contained fluid and are invariably sterile. Involution is common, the fluid being absorbed, the laminated membrane collapsing and undergoing degenerative changes, so that small cavities containing caseous and hyaline débris are frequently seen. When the parasitic elements are removed, the greater part of the lesion is found to be composed of avascular, poorly organized fibrous tissue with a honeycomb-like appearance. The adventitious tissues are hyaline, very few cells being present except in the periphery. The inner layers lining the cavities are coated with yellowish caseous material apparently of similar origin to that in the simpler lesions. The deposition of calcareous salts is a striking feature and may be so extensive as to form an almost complete capsule enclosing the parasite. There appears to be no doubt that many of these lesions, although small, are relatively old. The density and extent of the surrounding fibrosis and the degree of calcareous deposition supports this view. Occasionally in these cysts and also in the less complicated multiloculated forms a different type of cellular reaction may be noted (see Figure III.). This resembles very closely that seen in the early stages of the developing parasite at about the fourth week. As will be seen later this type of reaction persists throughout the life of the parasite in the ox. It is occasionally noted in human beings, especially in bone hydatid disease in advance of a growing pouch between bony trabeculae (see Figure IV.). The multicystic type resembles the form of the disease seen in bone in human patients rather than the alveolar form with which it has often been confused.

Hydatid Disease in the Ox.

In the ox the same varieties of cysts may be met with as in the sheep, but the characteristic lesion in all countries is the formation of multicystic tumours. There are, however, considerable differences in the histological appearances of the lesions in the two animals both as regards the parasite and the nature of the cellular reaction of the tissues of the host. The lungs are more frequently affected than the liver in the proportion of 69 to 27.

Simple Cysts.

The simple cysts are generally small, are most commonly found in the lungs and are often sterile. The laminated membrane is thin and poorly developed, even in relatively large cysts and is often wrinkled and but loosely applied to the inner layers of the adventitia. Degeneration of the cysts is extremely common, the cavity then becoming filled with caseous and hyaline débris. On the inner surface of the adventitia there is frequently a yellow deposit of caseous and fatty material. The adventitia is thick and well defined, but lacks the density and rigidity of that of sheep or human beings, so that the whole cyst readily collapses when the fluid is released. Multiloculated cysts also occur, most frequently in the liver. They resemble in appearance the form seen in the sheep, but the laminated membrane and adventitia have the characteristics described above. Many of the loculi are filled with caseous and degenerated hyaline material; the others are almost always sterile. In some of the cases there is a tendency to the formation of multiple separate cysts, the typical bovine form of the disease described below. In all these lesions the activity of the parasite is very low and it is often extremely difficult to be sure that it is still alive.

Multicystic Forms.

The multicystic type must be regarded as the typical form in bovines and it has been named *Echinococcus multilocularis*. It is most commonly observed in the liver and takes the form of congeries of small cysts which are separated from each other by fibrous adventitial septae (see Figure IV.). The cysts vary from less than a millimetre to a centimetre in diameter. The lesions also vary greatly in size and are not infrequently multiple. The cysts are invariably sterile, the laminated membrane is poorly developed and degeneration is very common. The adventitious tissues are well developed, as a rule there is a fairly sharp line of demarcation between them and the surrounding tissues and necrotic and calcareous changes are common. If the parasitic elements are removed, it is found that the greater part of the lesion is composed of adventitial tissues. Occasionally extremely complicated lesions are formed (see Figure V.). In these there are dense fibrous trabeculae enclosing irregular spaces containing in the main shrunken laminated membrane and caseous débris. In many of the old-standing cases the parasitic elements are dead, the lesion being non-progressive and undergoing sclerosis and inclusion by fibrous tissue.

The resemblance to some forms of chronic hepatic tuberculosis is very close.

The Cellular Reaction.

The reaction of the tissues of the ox to the parasite is very different from that seen in typical cysts of the sheep or of the human being. Even in the simpler cysts the cellular reaction is definite and the cells become arranged in three zones. The same type of reaction is noted in the typical multicystic tumours and three zones may be differentiated. The inner zone is composed of endothelial cells which are arranged in palisade fashion close to the laminated layer. These cells are large with small active nuclei and may resemble columnar epithelium. Giant cells of various types, some plasmoidal, others resembling those of tuberculosis are common in this zone (see Figure VII.). It is difficult to be sure of their function. They are derived from the endothelial cells which are found in the earliest hydatid follicle and form part of the protective reaction of the host. They resemble phagocytic cells and some sections suggest that they play a part in the elaboration of a limiting hyaline substance.

Similar cells with a similar arrangement are found from the third to the tenth week of development of the parasitic follicle in other animals in advance of growing pouches in the sheep and in hydatid disease of bone in human beings.

The second zone is composed of lymphocytes, leucocytes, many of which are eosinophile cells, and connective tissue cells; this zone becomes more cellular as the inner zone is approached.

The third zone is composed of connective tissue cells arranged concentrically and may contain patent bile channels. Calcareous salts are frequently found in this zone. In its periphery the cells merge into the stroma of the organ where compressed and atrophic hepatic cells may be found (see Figure VI.).

The laminated membrane in these complicated cysts is often thin and folded in an irregular manner, but still contains fluid which is possibly under a low pressure. Prolongations of the inner layer of the adventitia in the form of papillary formations are common and may be the rudiments of septae (see Figure VI.). In older lesions degenerative changes are extremely common. In these cases the parasitic elements are obviously dead and yet a similar type of reaction is met with in the adventitial tissues, apparently persisting as long as hydatid toxin is absorbed.

It is interesting to note that various South American observers who have been able to examine the earliest form of hydatid disease in the ox, have described forms which resemble somewhat those seen in the more intricate *Echinococcus alveolaris*. Llambais⁽⁸⁾ first described peculiar granular embryonic buds derived from the original membrane covering them, which appeared outside the confines of the original cyst and grew freely into the tissues of the host. He regarded them as identical with the peculiar amoeboid forms or "Jugendformen"

which had been described by Melnikoff as typical of the alveolar form of the parasite. Parodi⁽¹¹⁾ has also drawn attention to these rare and peculiar formations and agrees with Llambais as to their interpretation. Dévé⁽¹⁰⁾ has severely criticized Llambais's observations and preparations on histological grounds and maintains that the appearances of typical forms of the two lesions are very different.

Echinococcus Alveolaris.

The peculiar form of echinococcal disease, *Echinococcus alveolaris*, appears to be confined to man. No case has yet been observed and recorded in Australia. Reference has already been made to the confusion in nomenclature which has led to the report of multilocular hydatids in the belief that they were identical with *Echinococcus alveolaris*. There is, however, an extensive literature on the subject and for the greater part of the following description I am indebted to the excellent monograph of F. Dévé.⁽¹²⁾

Historical.

This form was first recognized and described by Virchow⁽¹³⁾ in 1855. He recognized the echinococcal nature of a peculiar lesion of the human liver formerly regarded as colloidal carcinoma. He described it as "multilocular, ulcerating hydatid of the liver" and for many years the name *multilocularis* has been applied to it. Since that time many cases have been studied and much variation of opinion still exists amongst helminthologists and pathologists regarding its true nature. The discovery of multiloculated forms in the ox and its superficial resemblance to this form has led to a great deal of confusion, while the peculiar form assumed in human beings by hydatid of bone has also led to many erroneous interpretations. The alveolar form of the disease, however, has definite and distinct characteristics which readily differentiate it from all other forms of the disease. The rise of two schools of thought—the unicists and the dualists—the various arguments adduced by each and the experimental work on the subject has been admirably summarized and discussed by Dévé.⁽¹⁴⁾

Geographical Distribution.

Echinococcus alveolaris is most commonly found in Bavaria, Servia, Switzerland and the Tyrol and for long was believed to be confined within these narrow limits. Dévé has, however, recorded several cases in France, in the Jura region and there appears to be a focus in Siberia. Until recently no case had been recorded in South America, but there appears no reason to doubt the authenticity of the two cases reported from that region by Wernicke and Ayerza. In the main, however, it is practically unknown in those countries where multilocular disease in the ox and typical unilocular hydatid of man is so common. Thus no cases have been recorded in Iceland, Australia, north Germany, Dalmatia, Algiers or New Zealand.

Pathology.

The lesion consists of a more or less firm tumour composed of a tough stroma surrounding innumer-

able small, almost microscopic alveolar cavities, containing gelatinous material or small cysts (see Figure VIII.).

After fixation with "Formalin" or alcohol the shrinkage of the cysts or gelatinous contents of the cavities gives rise to an appearance resembling the section of a slice of bread or *Gruyère* cheese. The cavities are extremely small and the microscopical size of the parasitic tissues is the striking feature. Cysts, if present, are rarely larger than a small pea. The stroma is yellowish or grey in colour and the limits of the tumour are irregular and uncertain, there being no true peripheral encysting layer. The parasitic elements are arranged in a peculiar manner and show little resemblance to the typical multilocular or multicystic forms of the disease. The cells of the germinal membrane are much exaggerated and form small protoplasmic buds which tend to spread in long outrunners along tissue planes into the surrounding tissues. In this way reticulated protoplasmic masses are formed, which appear to be endowed with a strange power of growth and toxic activity. A great deal of discussion as to the origin of these forms has arisen and many views have been held. Melnikoff regarded them as embryonic buds endowed with amoeboid movement and called them "*Jugendformen*." He considered that there was a layer of germinal membrane on the outer side of the cuticle and that they arose from this region. This view has, however, been disproved by Dévé, Elenevsky and others. Others took the view that they originated inside the original cyst and made their way through the cuticle. Dévé has pointed out that these buds are primitive and are present long before chitin deposition takes place, that is, that they are portions of the original germinal membrane. It would appear rather that the larva remains in a vegetative state and that growth of the plasmodial buds and the formation of chitin proceeds irregularly. Thus, it is not uncommon to find one part of the parasite composed of naked protoplasm in direct contact with the surrounding cells of the host, while a weak, chitinous, protective coat has developed in other parts. When the laminated, chitinous material is laid down, it is often so imperfect and irregular that it lacks rigidity, so that the formation of spherical cavities does not occur, the laminated material being crumpled and irregular. Under these conditions scolex formation is impossible so that it is rare to find reproductive elements. However, in some cases true, small, spherical cysts may be formed by this delayed cuticularization and scolices may be formed in these. Several observers (Posselt, Mangold and others) have stated that the scolices thus produced vary somewhat from those of the typical echinococci, but no finality has been reached on this question. Fundamentally these cysts in all particulars save their size resemble typical unilocular cysts.

The cellular reaction is peculiar and entirely different from that seen in the previously described lesions. It would appear that the close contact of the germinal plasmodial processes allows of active

diffusion of toxic products into the surrounding tissues with considerable local toxic effects. There are all the signs of inflammation, cellular necrosis and degeneration followed by a patchy sclerosis in an attempt to confine the lesion. The parasite tends to extend at the periphery, while the central parts of the lesion owing to cell destruction and sclerosis tend to break down and form a cavity filled with grumous or even purulent fluid which may contain cholesterol, pigment and calcareous particles. As a result the parasitic and the tissue elements appear to be inextricably mixed. As Dévé has so rightly insisted, it has many of the characteristics of an infiltrating neoplasm. There also appears to be a definite tendency towards the invasion of blood vessels and spread by metastases. The lesion is commonly fatal.

Summary of the Three Types.

It appears from these various pathological findings that three definite types of hydatid disease which appear histologically distinct, exist; the accompanying table summarizes the main distinctions between them (see Table I.).

Theoretical Considerations.

Two separate views have been put forward to explain the variations in the nature of the lesions described above. The dualists maintain that the two human forms are the larval stages of two distinct *Tænia*. They emphasize the peculiar specific structure of the alveolar variety, its infiltrative and destructive character and its not infrequent fatal ending. The rigid geographical distribution seems to favour the existence of a separate *Tænia*. Morin⁽¹⁵⁾ in 1875 first propounded this theory and as time went on many other observers inclined towards this view and a great deal of histological investigation and some inconclusive experimental work was performed. Further support was given to the dualists by Posselt⁽¹⁶⁾ who in 1904 described a *Tænia* obtained from a dog fed with the lesions of *Echinococcus alveolaris*. This worm had minor

variations in the number and size of the hooklets and the ova were arranged in a ball-like mass in the anterior half of the last segment. He regarded these differences as sufficient to justify the creation of a distinct species—*Tænia echinococcus alveolaris*. The upholders of the dual theory included such authorities as Rendu, Huber, Romanoff, Mangold, Melnikoff, Rasvedenoff, Posselt, Elenevsky and latterly Dévé. The last named has discussed the whole subject very exhaustively and gives a full history of the rise of the two schools of thought. He has emphasized the specific histological characteristics of the alveolar form, its difference from the multilocular form of animals and the prime necessity of carefully controlled experiments on animals as a means of conclusive proof. He has more recently become much less dogmatic in his assertions and concludes a discussion of the two theories⁽¹⁷⁾ in the following words: "Peut-être pourrait-on les concilier en admettant qu'il s'agit de 'deux variétés' secondairement différenciées d'un même parasite-souche."

The second school believes in the essential unity of the echinococcal lesions and regards them as morphological variants of the same larva caused by variations in activity of the parasite and in the nature of the tissue or host in which it begins to develop. This view is supported by the German school following the lead of Virchow, Leuchart, Wilms, Jencket and others. Latterly Llambais and Parodi, of Buenos Ayres, have also strongly supported this hypothesis.

They point out that the phenomenon of parasitic variation under varying conditions is not uncommon and that the onus of proof that two adult hosts exist lies with the dualists. They maintain that Posselt's action in describing a second species of *Tænia* was unwarranted, as such minor variations are commonly met with in other worms, that his observations have not been confirmed and that no one, in spite of attempts by Posselt, Mangold and others, has yet brought forward any other infallible experimental proof. They admit the

TABLE I.

Parasite.	Animal.	Characteristic of Parasite.	Geographical Distribution.	Cellular Reaction.
<i>Echinococcus polymorphus</i>	Man and sheep.	Unilocular, large, pouched and rarely multicystic; chitin formation good; typically very fertile; degeneration relatively rare.	Universal.	Firm sclerosis; fibrous adventitia with localization of the parasitic lesion; rarely possesses in multicystic forms a trizonal arrangement with endothelial and leucocytic cellular reaction resembling that of the ox. ↓
<i>Echinococcus multilocularis</i>	Ox.	Multicystic, small cysts; chitin formation poor; typically sterile; degeneration common; rare forms show bare protoplasmic processes with delayed cuticularization.	Universal.	Persistent endothelial and leucocytic reaction with trizonal arrangement; localization of the lesion by peripheral fibrosis; rarely some cellulo-microtic changes around bare protoplasmic buds. ↓
<i>Echinococcus alveolaris</i>	Man.	Alveolar, microscopic, bare protoplasmic forms; delayed, irregular, imperfect chitin formation; small cysts usually sterile, but rarely fertile.	Narrow; mountainous countries.	Inflammatory cellulo-microtic changes; central necrosis and breaking down; spread of the lesion at periphery; little or no localization. ↓

The arrows indicate the tendency of transitional forms between the three types to appear.

difficulty of explaining the geographical distribution of the disease, but state that it is not so rigid as has been held hitherto. Some advocates of this school state that climatic conditions, the method of life and food supply of the inhabitants of the countries, telluric conditions or other vague factors which are at present unknown, may have an effect on the vitality of the *taenia* causing its larval state to assume abnormal forms. It must be admitted, however, that nothing tangible has been put forward by this school which can answer effectually the "geographical" argument. Dobrotine (1910)⁽¹⁸⁾ and Skaczewsky (1911)⁽¹⁹⁾ have demonstrated a positive complement fixation test in cases of *Echinococcus alveolaris* using as antigen typical hydatid fluid obtained from the ordinary hydatid cyst and considered that this confirmed the unicists' theory.

The most important criticism of the dual theory, however, that has yet been put forward, is the difficulty of explaining how the life cycle of the parasite is completed. As the *Echinococcus alveolaris* is confined to man and as dogs do not have access to human livers, this variety should long ago have become extinct. Thus each of the two schools bring forward at least one practically unanswerable argument; the dualists, the geographical distribution and the unicists the question of the life cycle and it is doubtful whether unanimity will ever be reached until complete, carefully controlled experiments are carried out.

It is certain that purely histological methods are unlikely to carry us any further and that too much stress should not be laid on morphological differences. Variation in parasitic lesions is extremely common, many strange facts have been observed and it is essential to take a wider view of the problem than many writers have done in the past. These variations seem to depend on changes in the activity and virulence of the parasite and upon the nature of the tissue reaction of the host. These factors often act in conjunction and the relative importance of either in a given case is difficult to assess. Even in the same hosts, such as man, ordinary echinococcal infection may take many forms and certain tissues seem to be specially suitable for the optimal development of the parasite. Examples of such predilection for specific tissues is a common finding in parasitology. The tissues of young animals, too, appear to be particularly favourable. The production of different pathological lesions by morphologically identical parasites is also well known. This is well shown by the varying lesions produced in different organs by the schistosomes and in the skin and spleen in leishmaniasis.

The varying reaction of different hosts to the same parasite is also well known. This is especially seen when the behaviour of the tissues of the ox is contrasted with those of man. In the ox the reaction to *Bacillus tuberculosis* is well developed and gross lesions characterized by dense, early fibrotic and calcareous changes are the rule. To actinomycosis and similar chronic infections the reactions are also very different from those in man.

Another observation which may throw light upon the problem is the presence of transitional forms between the three varieties discussed above. Thus in the sheep multicystic forms sometimes appear and occasionally the cellular reaction in front of an advancing pouch is identical with that seen constantly in all cysts in the ox. In hydatid of bone in man a similar trizonal arrangement of the cells of the adventitia may also occur (see Figure IX.).

In the ox peculiar forms have been described by Llambais and Parodi. In these, in spite of the particular tendency of bovine tissue to early sclerosis and premature calcification, the above observers have noted plasmoidal buds of the germinal membrane which grow out into the surrounding tissues and give rise to cellular necrotic changes before delayed chitinous cuticularization takes place. These resemble very closely the characteristic protoplasmic processes of the alveolar form.

The essentially similar form of all these various lesions must be admitted. In all there is a germinal membrane of varying activity; in all a chitinous cuticle is formed, although sometimes poor or delayed; in all fluid is formed; in all scolices may develop and in all a varying cellular reaction on the part of the host tissues occurs. It would seem, then, from a general point of view that it may be possible for all these lesions to be larval states of the same parasite under varying conditions.

A consideration of the earliest stages of development of the typical hydatid larva and an application of the facts to the present problem, in my opinion, helps to throw some light on the final form assumed by the parasite; the following conception is tentatively put forward.

As has been discussed in a previous paper⁽²⁰⁾ the development of the parasite from the time the embryo reaches the liver in a typical case may be divided into three stages. During the first or plasmoidal stage the embryo grows rapidly, shows remarkable activity and produces diffusible toxins which cause toxic and inflammatory changes in the surrounding tissues. These are manifested by cellulo-necrotic change in the cells of the follicle and by severe toxic or necrotic change in the surrounding liver cells. An exaggeration of this stage due to the presence of multiple contiguous parasites, to hypervirulence of the parasite or to special susceptibility of the soil would lead to unrestrained growth of the parasite, perhaps insinuation of protoplasmic buds along tissue spaces, the easy setting free of specific toxin from them, the production of cellulo-necrotic changes and the formation of a lesion which would resemble in every detail that of *Echinococcus alveolaris* in man. The lesion would tend to extend at the periphery, but towards the centre the cellular reaction, the local production of antibodies and interference with the nutrition of the parasite would all tend to restrict its exuberant growth and protective chitin would tend to be laid down, at first irregularly, but later in the form of cysts. In these cysts reproductive elements would be produced, provided that sufficient nutritive sub-

stances could make their way through the mass of reactive tissues. Towards the centre the same lack of nutrition would finally lead to breaking down and cavity formation.

In this way an explanation of the irregular and varied nature of the typical alveolar form would be forthcoming. It may be that in the mountainous countries in which this type of the disease occurs, the larva may find such special, necessary and probably indispensable conditions, either climatic or nutritive, which would tend to cause this type to appear always.

The second stage of development is the follicular stage in which the cellular reaction of the adventitial tissues assumes a trizonal arrangement, the parasite elaborates a specific fluid and a protective chitinous covering. If this stage is reached and persists throughout the life of the parasite, a picture similar to the lesions in the ox is produced. In this the persistent cellular reaction of the host seems to inhibit the ideal development of the parasite. It is possible that deficient chitin production which may be due to nutritive or biochemical reasons, may allow the constant passage of toxins and give rise to this persistent reaction. In these lesions it may be that the tissues of the ox exhibit their well known reactions to chronic irritation. There seems to be no doubt that this animal is an unsuitable host for the parasite. The limitation of the size of the lesions, the frequency of degeneration and death of the parasite, the rarity of scolex production, all emphasize this fact.

Sometimes in soft, vascular, non-resistant tissues like the lung, comparatively large, simple, spherical cysts may form, but the reaction is still evident and there is a tendency towards sacculation. In other tissues multiple cysts tend to form. There seems no doubt that this is due to the production of microscopical herniations induced by the intracystic pressure forcing the whole thickness through relatively weak parts of the adventitia. These herniations are then secondarily excluded with the formation of separate cysts. In some cases the activity of the surrounding adventitia is so great that papillary-like processes are formed which are probably the rudiments of septa which ultimately divide up the cyst (see Figure VI.). No doubt varying activity of growth of the parasite takes place with exacerbations while it is temporarily in the ascendant, during which time active pouching occurs. The phenomenon of exogenous budding from an intracuticular source has often been advanced to explain these multicystic tumours. The writer has never been able to discover any evidence that this occurs in the way usually described. The tendency to a multicystic type of growth seems to be present from the earliest stages, no true mother cyst being present.

If the parasite settles in an optimal soil, such as the tissues of sheep or man, a unilocular, fertile cyst representing the third or final stage of development is formed. In this a perfect balance between the parasite and host tissues is arrived at. The parasite elaborates a thick, semipermeable, protective,

laminated, chitinous cuticle which not only serves to contain the fluid, but protects the host against the specific toxin so that an active cellular reaction does not persist. The adventitia becomes a fibrous envelope and adapts itself by a replacement fibrosis of atrophied parenchymal cells to the growth of the parasite. As long as nutrition remains good the reproductive elements are formed normally.

It is possible, however, by the involvement of natural channels or through trauma that the vitality of the parasite is menaced. Under these conditions rupture and evacuation of the contents may occur and doubtless this may be a favourable end for the parasite and may be the teleological explanation of the high intracystic pressure and the tendency of the cyst to encroach on natural channels. As a result death and degeneration of the cyst contents often occurs with subsequent fibrosis and encapsulation. In some cases, however, reactive daughter cyst formation occurs as a protective mechanism to insure the prolonged existence of the parasite and the fulfilment of its biological destiny in the production of reproductive elements. This is a development which is so commonly seen in human infestations and the question has been discussed by the writer in a previous paper.⁽²¹⁾

In the sheep the adventitial tissues tend somewhat to sclerosis after a time and the nutrition of the parasite may suffer. There is a definite tendency towards multiple pouching and the formation of a truly multiloculated cyst opening into a common cavity. It has been suggested that this represents an attempt on the part of the parasite to extend its range of osmotic absorption. Most of the pouches, however, extend in the line of least resistance through a relatively weak part of the adventitious coat between bands of resistant tissue or structures such as bronchi, bile ducts or blood vessels.

It has been noted above that the growth of such pouches may induce the reappearance of the primitive cellular reaction which assumes a trizonal arrangement and appears in advance of the growing pouch, apparently in an attempt to limit the growth. Such pouches may ultimately be cut off by the active contraction of the surrounding fibrous tissue and as a result small secondary cysts may form. This is undeniably the case when the cyst is growing in a tissue such as bone and is the explanation of the peculiar multicystic arrangement of such a lesion, the redundant chitinous material being removed subsequently by phagocytes.

Still further sclerosis and thickening of the adventitial tissues may occur and a border line of nutrition may be reached in which the parasite sinks into a lethargic state in which it is inactive though alive. These changes may go still further, death and degeneration of the parasite may occur and it may become completely encapsulated by dense, fibrous tissue in which calcareous salts may be deposited to such a degree as to form a complete calcareous capsule for the lesion. These are obviously old lesions, the parasite being represented

ILLUSTRATIONS TO DR. HAROLD R. DEW'S ARTICLE.

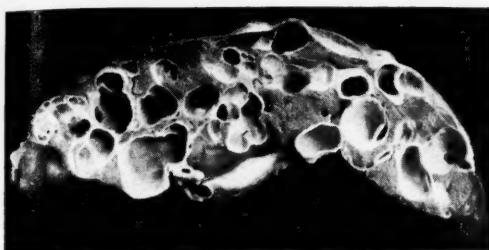


FIGURE I.
Multiple hydatid cysts in the liver of a sheep, showing univesicular multilocular and multicystic forms.

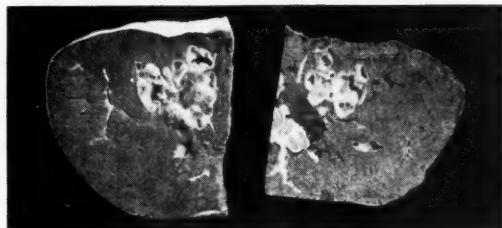


FIGURE IV.
Multicystic form of hydatid in the liver of the ox (*Echinococcus multilocularis*), with small cysts embedded in dense fibrous stroma.

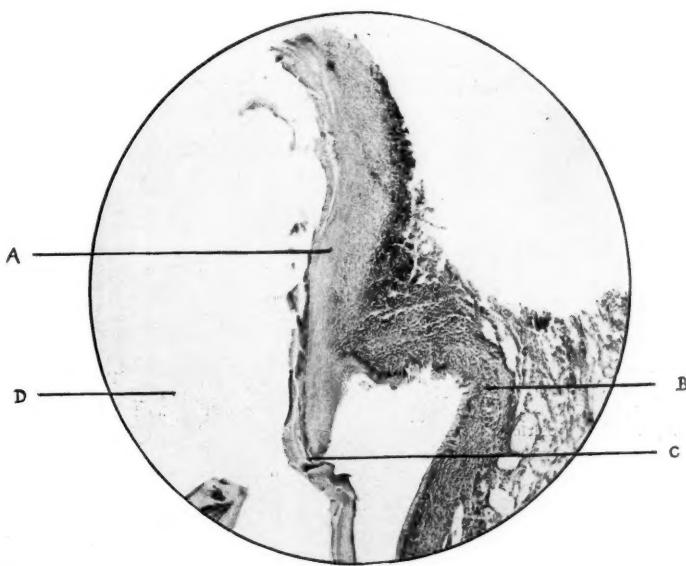


FIGURE III.
Section of portion of the adventitia of multilocular hydatid of the sheep, showing the beginnings of a small pouch. Note the sudden alteration of the adventitious layer at B where it is cellular and arranged in three zones, while at A it is thick, hyaline and dense; C = shrunken laminated layer; D = cavity of original cyst. $\times 70$.

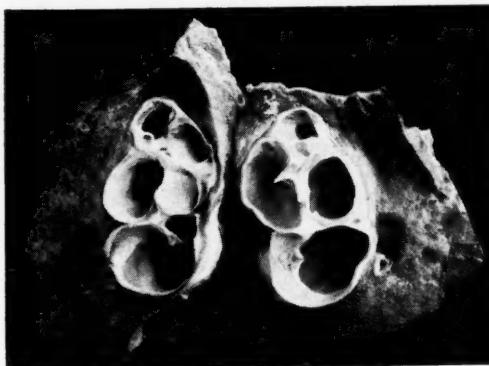


FIGURE II.
Typical multiloculated cyst of the lung of the sheep, showing communicating loculi, septae and dense thick adventitia.

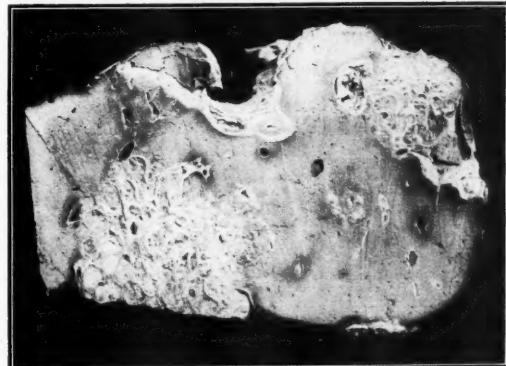


FIGURE V.
Multicystic form of hydatid of long standing in the liver of the ox, showing complicated type of lesion.

ILLUSTRATIONS TO DR. HAROLD R. DEW'S ARTICLE.



FIGURE VI.

Section of multicystic type of hydatid disease of the ox, showing typical cellular reaction in the adventitia. Note the zonal arrangement, the peculiar papillary formations and the presence of calcareous deposition.



FIGURE VII.

Section of adventitia of multicystic form of hydatid disease, showing the inner layer of the adventitia.



FIGURE VIII.

Typical *Echinococcus alveolaris* (after Dévé) showing solid protoplasmic buds (*Jugendformen*) irregular chitin formation and peculiar cellular reaction. $\times 150$.



FIGURE IX.

Bone hydatid from human source, showing peculiar trizonal arrangement of the adventitious tissues in advance of a growing bud. $\times 180$.

by collapsed and folded chitinous laminations impregnated with caseous and calcareous débris.

In the sheep all gradations from the typical, simple, unilocular to the multicystic type occur and there seems to be no objection to the relatively simple explanation above given, that the various modifications are due to varying degrees of sclerosis of the adventitial tissues.

Acknowledgments.

I have to acknowledge with gratitude the work of Miss Cecil Maudsley in the preparation of the photographs illustrating this article; to Professor Woodruff, of the Melbourne University Veterinary School, I am also indebted for access to specimens and for help in procuring veterinary material.

References.

- (1) L. Sambon: *Journal of Tropical Medicine and Hygiene*, February 12, 1925, page 102.
- (2) M. V. Carbonell and A. Zwanzk: Second National Congress of Medicine, Monte Video, September-October, 1922.
- (3) Wernicke and Ayerza: Quoted by F. Dévé.
- (4) F. Dévé: Transactions of the First International Congress of Comparative Pathology, Paris, October 17, 1912.
- (5) W. Ramsay Smith: "Echinococcus Multilocularis," *Medicine*, October, November, December, 1905.
- (6) C. E. Corlette: "Hydatid Infestation of Bone, Multilocular Hydatid Disease and Ordinary Hydatid Cysts," *THE MEDICAL JOURNAL OF AUSTRALIA*, January 24, 1920, page 73.
- (7) I. Clunies Ross: "Echinococcus Multilocularis: What is Meant by This Term?" *THE MEDICAL JOURNAL OF AUSTRALIA*, April 7, 1923, page 372.
- (8) J. Llambias: "El Equinococco Multilocular de los Bovinos," *Anales de la Facultad de Medicina*, Monte Video, September, October, 1919, page 585.
- (9) R. Melnikoff: *Centralblatt für Allgemeine Pathologie, Neue Serie*, 1899, Seite 670.
- (10) F. Dévé: "Echinococcosis Alvéolaire Humaine et Echinococcosis Multiloculaire Bovine," *Anales de la Facultad de Medicina*, Monte Video, March-April, 1920, page 129.
- (11) A. Parodi: Second National Congress of Medicine, Buenos Ayres, October, 1922, page 44.
- (12) F. Dévé: Transactions of the first International Congress of Comparative Pathology, Paris, October 17, 1912.
- (13) R. Virchow: *Berliner Klinische Wochenschrift*, den 31 Dezember, 1883, Seite, 824.
- (14) F. Dévé: Transactions of the First International Congress of Comparative Pathology, Paris, October 17, 1912.
- (15) Morin: Quoted by F. Dévé.
- (16) Posselt: *Deutsche Archiv für Klinische Medizinische, Band 59*, 1897.
- (17) F. Dévé: "Nouveau Traité de Médecine," Masson et Cie, Paris. Second Edition.
- (18) Dobrotine: *Journal de Chirurgie (Analysis)*, Tome V., 1910, page 320.
- (19) Skaczewsky: *Münchener Medizinische Wochenschrift*, November 28, 1911.
- (20) H. R. Dew: "The Histogenesis of the Hydatid Parasite (*Taenia Echinococcus*) in the Pig," *THE MEDICAL JOURNAL OF AUSTRALIA*, January 31, 1925, page 101.
- (21) H. R. Dew: "Daughter Cyst Formation in Hydatid Disease: Some Observations on Its Causation and Effects," *THE MEDICAL JOURNAL OF AUSTRALIA*, October, 1925, page 497.

FOOD DEFICIENCIES IN THE TERRITORY OF NEW GUINEA.

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MANY authors of works relating to dietetics emphasize the importance of the protein factor and some whose opinions are entitled to respect, go so far as to assert that among similar races living under identical conditions, the amount of protein in a diet determines the relative muscular power, physical endowment, degree of endurance, resistance to disease and even the place to which a tribe or race has won in manliness, energy and soldierly instincts.

If there be truth in this assertion and local observations support it, one can readily understand the lowly position in the scale of things of the Papuo-Melanesian tribes.

The average essential food requirements daily may be taken to comprise 120 grammes of protein, 500 grammes of carbohydrates, 50 grammes of fat and adequate vitamins of all types.

It is held by the writer that without a proper food balance or in the absence or relative deficiency of the essential vitamins no race can attain to physical excellence or civil progress.

The inhabitants of the Territory of New Guinea comprise two main primary stocks, modified by very many ancient and more recent invasions towards the production of a fixed composite population to which the name "Papuo-Melanesian" has been given.

The original negrito stock, with close-curled and frequently "peppercorn" hair and the so-called "predravidian" stock with longer hair have fused irregularly to produce a hybrid tufted-haired stock and throughout the Territory variants of these types verging either to the true "peppercorn" or the typical "fuzzy-wuzzy" predominate.

To the north and east, however, and occasionally elsewhere there are evidences of a previous influx of oceanic Mongols, on the north probably from the southern Philippines, on the east by reflux waves of Polynesians from the south, but this alien stock has merged so closely with the basic population that it is apparent only in occasional resemblances of physical feature and tribal custom.

The primitive and isolated conditions under which Papuo-Melanesian communities live, render them extremely diverse in language, custom and habit. There are semi-nomadic and migratory tribes who do not till the soil, and whose "villages" are haphazard strings of single huts; there are also tribes of hunters, fishers, sailors or warriors who constitute primitive agricultural and fishing communities with highly developed social organizations, fixed institutions and sometimes considerable skill in boat building, decorative art and the like.

The agricultural facilities of the Territory are not by any means universally good since, owing to the broken and irregular nature of the country, one finds between the coastal flats and the central

snow covered mountains of New Guinea almost every possible variation in climate, water supply, soil and surroundings.

It is interesting from the point of view of dietetics to compare the physique of the natives resident in the better localities with that of the inhabitants of the less fertile or less fortunate regions.

The natives of Matupi, near Rabaul, and of the Markham River in New Guinea and of parts of the peninsula of Talasea and of several other food favoured localities are healthy, strong, upstanding people. On the other hand, the primitive natives for example of the Rai coast of New Guinea resemble very closely the sufferers from fat deficiency seen in such numbers in central Europe as a result of the war.

The ordinary diet of the natives is at its best bulky and innutritious; it is hard to digest, deficient in fat and in protein and often poor also in vitamins. At its worst it is a famine ration.

Civilized peoples are so accustomed to regard a diet that satisfies the appetite, as fulfilling every requirement essential to health that they fail to realize that the massive carbohydrate foods of the native in his own village satisfy his hunger without providing him with an adequate quantity of the vital food constituents.

This, be it recalled, is under the best of conditions, while it must be remembered that he is by no means always so fortunately situated, for his primitive agriculture and his insufficiency against the seasons render his sources of supply uncertain and unstable. Such is the thriflessness of the native, for example, that following a particularly good season and the storing up of a surplus, he will pass his time in continuous feasting until long past the proper time for planting and will consequently be reduced to necessity within a month or two afterwards and even to actual famine.

Such a famine is often only relative, that is to say, there will not be an absolute dearth of food, but the best native foods will be absent, leaving merely woody roots and tubers which of all the foods are those most deficient in both protein and fat and most irritating to the alimentary canal.

It may even be said that a vast percentage of all natives living under native conditions in the Territory of New Guinea lives in a state of chronic malnutrition or even partial starvation.

Among the common foods of the native are the following: Carbohydrates—taro, breadfruit, maize, bananas, sweet potato, sugarcane, crude sago, tapioca and yams; fats are represented by very small quantities of animal fat, the coconut, the native almond and various forms of ground nuts or peanuts. Among proteins are the pig, fish, flying foxes, wallabies, various kinds of birds and various kinds of shellfish, lobsters and so forth.

Formerly cannibalism was very widespread, but is now very restricted in range and non-existent in most localities.

In certain localities the natives are preeminently eaters of taro, in others of *saksak* (crude sago);

others again, island tribes, live mainly on fish and are dependent on their mainland neighbours for taro or other food. In the main it may be said that coarse carbohydrates are extremely plentiful; proteins are obtainable with some difficulty; fats are extraordinarily rare and highly prized.

With regard to the essential vitamins, vitamin B is common in many of the native foods and there is generally little deficiency in this regard amongst natives living in village communities. Vitamins A and C, however, are considerably less common and in fact various deficiencies in the native constitution may in the opinion of the writer be traced to their scarcity.

This lack is emphasized also by the avidity with which the native seeks fats, fruits, fresh vegetables and edible leaves. The greater part of the fats obtainable, however, is of vegetable origin which fats, as is well known, are inferior to animal fat in vitamins.

Since the absence of the vitamins mentioned is considered to predispose towards tuberculosis, it is interesting to note that of the *post mortem* examinations performed in Rabaul over the last two years, the lesions of a rapid and fatal tuberculosis were demonstrated in one-third.

The character of the carbohydrate eater is opposed to the character of the races which include in their diet an adequate proportion of animal protein, in that it is deficient in the qualities of energy, initiative and progress, though, under the best conditions the carbohydrate eater equals and may surpass the protein eater in the power of endurance at monotonous physical tasks. Such nations readily become the hewers of wood and the drawers of water for the more vigorous nations. They make ideal porters and pack carriers and apparently they do not desire to be otherwise.

The eater of coarse carbohydrates, too, presents, a generally lowered vitality and a definite diminution of resistance to such diseases as pneumonia, intestinal disorders and various ulcerations, while there is often seen an early general debility.

These manifestations are quite distinct from the classical food deficiency diseases which from time to time appear.

If the foregoing observations were accepted as established and the routine native diet were considered, it would be probable that the native of this Territory would be poorly developed and short in stature, inclined to the prominent abdomen and thin legs of malnutrition, lacking in energy and initiative, though possessed of occasional considerable endurance, particularly prone to intestinal diseases and various ulcerations and liable to succumb very readily to respiratory diseases, especially tuberculosis. This precisely mirrors the condition that is actually found.

When free natives are brought from their village fastnesses to work under indenture upon plantations or as Government labourers, the whole problem of their diet and feeding is rendered much more complicated.

To civilized people such a transfer seems a trivial matter, but to a native it is actually a period of most considerable danger.

He has lived in his village from infancy, isolated from the outside world and because he has been untouched by outside diseases, is surprisingly susceptible to them. Moreover, he has accustomed himself to feed upon a diet which, though almost always below the optimum scale set by investigators, he has learned to assimilate to the satisfaction at least of his minimal needs.

Once this isolation is invaded and its defences overthrown by his being brought under the menace of new diseases, a new environment, new conditions of work and new dietetic needs, the weaknesses of the native constitution are immediately manifest.

Apart from accidental epidemic visitations, the two factors which affect the death rate of labourers in this Territory are, respectively: (i.) the diet provided and (ii.) the proportion of labourers recently brought from primitive outlying districts (previously untouched) to the total labour strength.

Thus, for example, in any year in which many natives previously not in contact with the white man, are brought to work upon plantations or alternatively in which there is considerable movement of natives during the year from plantation to plantation, there will be a very considerable increase of morbidity and irrespective of the excellence or otherwise of the medical work the mortality statistics will rise considerably.

During the last year in the Territory of New Guinea there have been reached for indenture several native tribes previously unvisited by the white man and the mortality amongst these new recruits has been very heavy indeed in spite of every attention. Pneumonia and dysentery have been the principal agents of destruction and it has been particularly noticed that the dysentery has directly followed the wholesale change of dieting which has been encountered, while the pneumonia has been in a large proportion of persons a terminal infection subsequent to the diarrhoea and dysentery above mentioned.

These natives were hill men and lived formerly on coarse native foods. They were transferred at once to shipboard conditions and a diet of polished rice and tinned meat.

It was noted by the present writer on his arrival in the Territory as Director of Public Health that while there were several alternative diets, that which was in most common use consisted of polished rice and tinned meat. There were many factors which brought about this lamentable state of affairs, among which perhaps the principal were that rice and tinned meat keep indefinitely, are readily portable and are packed in known and weighed quantities. As a result, though alternatives were offered under the Native Labour Ordinance, this dangerous diet has become almost the sole diet for indentured labour, with lamentable results.

It was at once decided that all the available native foodstuffs of the Territory should be investi-

gated with a view to determine a diet which would meet the requirements of the natives and which at the same time would not impose too heavy a burden upon the small planter.

While this work was in progress, the need for urgent and drastic change was evidenced by two outbreaks of beri-beri in concentration camps which had been established to cope with the spread of gonorrhoea. On March 23, 1925 (March being a period of changeable weather during which the resistance of the unclothed native to disease is always lowered), all the patients at Vulcan Island, namely five hundred and thirty, were examined for the presence or absence of knee jerks and in fifty-nine knee jerks were found to be absent or very sluggish.

All these natives were put on 2·5 grammes of "Marmite" (autolysed yeast) with biscuit once a day and a plentiful supply of fresh native foods, while the "Marmite" was increased to 15·0 grammes twice daily on those days on which native food (fresh vegetables) was not obtainable.

On subsequent reexamination twenty natives out of the fifty-nine had recovered active knee jerks and eighteen had recovered sluggish knee jerks or active knee jerks in one leg only. On May 7, 1925, it was possible to report that every one amongst these suspects had recovered.

Of twenty natives with definite beri-beri which actually developed, six only were remaining in hospital on the date mentioned and these all ultimately recovered.

It was particularly noticed that in all cases in which the diagnosis was made before the stage of inability to walk without a stick, the patients were cured with apparent ease by rest and diet. Once past this stage, however, improvement was very slow, the patients retaining for a considerable time definite cardiac symptoms upon even the slightest exertion.

A mild epidemic of diarrhoea preceded the outbreak mentioned above, as is usual.

The outbreak described followed very definitely the closing of the native market adjacent to the Vulcan Island compound where on two days in the week native foods were purchased. The market stopped suddenly on February 27 owing to certain events of importance to natives drawing the native vendors elsewhere and within three weeks the first cases of beri-beri (nine) were diagnosed.

The second outbreak, which was in Kavieng, New Ireland, was more serious and arose from no such sudden cause, but as a result of a constant lack of all but a small percentage of fresh native foods. Of a monthly average of two hundred and eighty-four patients over the several months of the epidemic a total of 14% was affected, males suffering more heavily than females. At the time there was a certain amount of overcrowding amongst the male patients and these were engaged upon hard work. It was particularly noted, however, that males who were indentured labourers and had therefore been living on a changed diet, suffered to a greater extent than those who had been before admission to the

compound free kanakas. The actual figures were 23.1% and 14.8% respectively. Shortly after the epidemic became well established, supplies of native foods again became obtainable and there followed a general improvement.

With a few striking exceptions the disease was insidious in onset and attended by most of the clinical features described in textbooks; oedema of a fleeting type was frequently observed; severe oedema was not, however, a common occurrence.

The disease when established was in 95% of the patients of the dry type with rapid wasting of the muscles of the thigh and calf.

The mortality amongst these natives owing to a temporary but absolute lack of native foods rose at one time as high as 36%.

In 90% of the fatal cases the patients were bedridden and generally emaciated prior to death, but occasionally sudden death occurred from cardiac involvement.

These ominous and regrettable outbreaks were presented vigorously to the attention of the Government as instancing the urgent necessity of instituting by law fuller and more suitable native dietaries and the figures were supplemented by an examination of all contract labourers, undertaken on the instruction of the writer by the medical officers in charge of the outstations (notably at Manus). Indentured labourers at this station can only with the greatest difficulty obtain supplies of native food.

On examination of the police boys, Government labourers and Government prisoners of this station it was found that 59% were suffering from loss of knee jerks, partial or complete, the incidence being greatest amongst prisoners and least amongst the better fed police boys.

The diets now recommended for native labourers in the Territory allow of very considerable variation and the provision is insisted upon of adequate supplies of fresh food on a certain number of days per month. Though by no means ideal, they represent a very great advance upon present conditions. The main stipulation is that rice shall not be used on more than fourteen days in any one month.

The present standards under recommendation are not to apply to "house-boys" and are preliminary changes only, intended to deal urgently with the present position.

They are as follows:

Diet No. 1.

- Rice 1 lb.
There may be substituted for rice any one of the following: Maize meal (1 lb.) or bread or biscuit (1½ lb.) or saksak (dry) or tapioca (dry) (2½ lb.).
- Good quality wholemeal barley or sharps 1 lb.
There may be substituted for barley or sharps any one of the following: Dried peas, beans or lentils (1 lb.) or peanuts or galips (without shell) (1 lb.) or germinated peas, beans or lentils (6 oz.); one only coconut per person may be given alternatively, but in that case the rice issue must equal not 1 lb. but 1½ lb.

- Fresh Meat (mutton, beef, goat, pork or other recognized native meats, all free of bone) 3 oz.
Or, alternatively, fresh fish (free of head and tail) 4 oz.
There may be substituted for fresh meat or fresh fish any one of the following: Native oysters or shellfish (without shell) (4 oz.) or native lobsters, crayfish or crabs (with shell) (8 oz.) or at the option of the employer in cases of sickness, duck or hen eggs (two only) or milk (1 pint).
- Pure water, for drinking purposes only 6 pints
- Salt (distributed as one issue of 1 oz. weekly) 1/2 oz.

Diet No. 2.

- Taro or breadfruit or yam 5 lb.
There may be substituted for taro, breadfruit or yam any one of the following: Bananas (7 lb.) or green maize (6 cobs); 7 lb. of kaukau (sweet potato) may be substituted, but it is not to be issued on more than fourteen days in any one month.
- Coconut (ripe): One between two persons, approximately 3 oz.
Or alternatively Australian beef dripping 2 oz.
- Preserved or salt or smoked or dried meat (all free of bone) or alternatively preserved or salt or smoked or dried fish issued in two, three or four issues weekly at the option of the employer, to equal weekly 1 lb.
- Pure water, for drinking purposes only 6 pints
- Salt (distributed as one issue of 1 oz. weekly) 1/2 oz.

Diet No. 3.

- Rice 1½ lb.
There may be substituted for rice any one of the following: Maize meal (1½ lb.) or bread or biscuit (2 lb.) or saksak (dry) or tapioca (dry) (2½ lb.).
- "Marmite" or autolysed yeast ½ oz.
There may be substituted for "Marmite" any one of the following: Edible native leaves, free of stems, such as native spinach: *Aibika*, *kalakula*, *aupa*, *kumu*, *kasut*, *pit*, *atiu* and so forth, or other recognized edible native leaves or shoots (½ lb.); or green vegetables, such as green peas, string beans, tomatoes or other similar vegetables, native or introduced, approved by the Director of Public Health (½ lb.); or green maize (2 cobs); or fresh fruit, such as *papaia* (pawpaw), mango, avocado pear, cucumber, pineapple or other fresh fruits, native or introduced, approved by the Director of Public Health (1 lb.).
- Preserved or smoked or salt or dried meat (all free of bone) or alternatively preserved or smoked or salt or dried fish, issued in two, three or four issues weekly, at the option of the employer, to equal weekly 1 lb.
- Pure water, for drinking purposes only 6 pints
- Salt (distributed as one issue of 1 oz. weekly) 1/2 oz.

Cooking Arrangements.

One native cook shall be employed for every forty or proportion of forty labourers employed.

¹ If preferred fresh meat or fresh fish may be distributed at the rate of 1½ lb. of the former or 2 lb. of the latter weekly in two or four issues.

² Alternatively an equivalent amount may be cooked with the food and thus issued.

³ In place of preserved meat or fish, fresh meat or fish in the quantities and with the alternatives shown in Item 3, Diet 1, may be substituted.

⁴ Alternatively an equivalent amount may be cooked with the food and thus issued.

⁵ Where green maize is issued, 1 lb. of rice is sufficient and may be substituted for 1½ lb. rice.

⁶ In place of preserved meat or fish fresh meat or fish in the quantities and with the alternatives shown in Item 3, Diet 1, may be substituted.

⁷ Alternatively an equivalent amount may be cooked with the food and thus issued.

TABLE OF FOOD VALUES.

Foodstuff.	Calories.	Vitamins.			Remarks.
		A.	B.	C.	
Polished rice	1,682	0	0	0	The absorption of rice diminishes rapidly with the quantity ingested; the larger the quantity, the smaller the assimilation beyond an optimum point. This diet is deficient in the antiscorbutic vitamin, but this is largely offset here by sunlight; and pawpaw which contains ++ vitamin C, is readily accessible on most plantations as an addition to diet. The issue of meat should be increased by half a pound daily to make the protein and fat adequate.
Wholemeal barley	1,002	+	++	0	
Fresh meat (water and salt)	304	+	+	Low	
Total	2,988	+ + -	++ + -	Low	
Taro (<i>Colocasia esculenta</i>)	2,916	Very low	++	0	Ten per cent. of the value of taro is wasted owing to the method of cooking. There is an absence of C vitamin and planters should make available for addition to the diet any of the following: Sprouted beans (++) sprouted cow peas (<i>Vigna sinensis</i>) (+++), germinated lentils (++), pineapple (++), pawpaw (++), tomato (+++); all these grow very commonly and readily. There is a great deficiency of protein, needing an addition of 50% total protein in grammes.
Coconut	52	+	++	0	
Preserved fish	136	0	+	0	
Total	3,104	+ + + -	++ ++ + -	0	
Polished rice	2,448	0	0	0	It will be noted in this diet that "Marmite" is official, but is in general too expensive to use. Planters should note that natives often reject edible leaves unless supervised, eating only rice and owing to the rice being cooked dry, the leaves must be cooked separately. Fresh fruit as above, particularly tomatoes, actually make a better addition. Caloric value is the lowest of the series and is actually even lower than is shown, since a considerable proportion of the whole value is not assimilated. Protein is low, also fat, the latter particularly so and half a ripe coconut should be added to provide a sufficiency. Where possible this diet should be used only if others are unobtainable.
Edible native leaves	90	++	++	++	
Preserved fish	136	0	+	0	
Total	2,674	++	++ + - -	++	

All foods must be of good quality and in the case of barley, sharps, dried peas, beans or lentils or similar articles issued with rice, maize meal, bread, biscuit, sagoak or tapioca must be issued ready cooked.

Alterations or modifications in this schedule to suit the exigencies of local circumstances may be made by the Director of Public Health on application to him in writing and such approved alterations or modifications expressed in writing shall thereupon be regarded as a sufficient ration issue in respect of the labourers for whom such is solicited.

Where labourers are patients in hospital their food rations and weekly or monthly issues of tobacco, matches and pipes may be withheld, at the discretion of the medical attendant, where considered necessary for medical reasons; otherwise full issues must be made.

None of the diets set out above is sufficient, but each represents the greatest advance acceptable to the Administration upon present diets. In actual fact the diet that is official for the Territory at the present time and that these suggestions should correct to a large degree, represents a daily food value of only 2,550 calories and is absolutely lacking in vitamins of any kind whatever.

An analysis of the essentials of diets 1, 2 and 3 are given in the table.

From the foregoing it will be observed that these additions to diet are merely preliminary. The outstanding feature of the case, however, is that the position with regard to diet deficiencies is now apprehended.

It is trusted that with these immediate alterations and with subsequent supervision and correction, the

diet for indentured labour throughout the Territory of New Guinea will greatly improve, while propaganda work in the villages is directed towards establishing better conditions in this most vital and least regarded aspect of native development and welfare.

I have to express my indebtedness to Dr. T. Clive Backhouse, formerly of Kavieng, and Dr. E. T. Brennan, now of Madang, from whose careful observations and figures in relation to the epidemics of beri-beri at Kavieng and at Vulcan Island respectively my own are drawn in these regards.

SURGERY OF THE FRONTAL SINUS.¹

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I AM introducing the subject of surgery of the frontal sinus in the form of a critical analysis of the different types of operation devised for the cure of frontal sinus suppuration.

My experience during thirty years has not been confined to a small number of cases and during that period I have encountered many which have required great judgement in the selection of the particular operation suitable to the condition. The question of

¹ Read at a meeting of the Section of Oto-Rhino-Laryngology of the New South Wales Branch of the British Medical Association on May 27, 1926.

cosmetic effect weighs as a factor of no inconsiderable importance. Patients are always reluctant to face an operation which involves an external incision and no doubt that is one of the reasons that so many men have endeavoured to invent internal nasal operations which would be free from such an objection and at the same time give a result satisfactory to the patient and the operator.

The architecture of the frontal sinus is not always constant and that factor taken together with the fact that adjoining accessory cavities are frequently involved increases the difficulty of curing these patients.

Anatomically the frontal sinus is usually described as possessing an anterior, inferior and posterior wall, although there are really four boundaries, if we include the septum dividing the two cavities. I think a conception of it as a wedge whose base is represented in the anterior wall and the sides by the inferior and posterior wall which approximate and join together at their lower end in the posterior orbital space, is not an incorrect one.

Great variations in form and size are met with. Sometimes one sinus extends beyond the middle line so much that only a very small sinus exists on the other side. In one instance I came across a vertical plate dividing the cavity into an anterior and posterior space but incomplete below. One might during operation regard this as the posterior wall and if a mistake of this kind be made, failure to cure the patient would be the consequence. In this case the two cavities were so large that they encroached upon the anterior cavity of the skull. The patient, an elderly woman, from the mental point of view was still a child, from which I inferred that the anterior lobe of the brain was but feebly developed.

It is now an accepted opinion that these cavities are formed by the extension of the ethmoid between the two compact walls of the frontal bone and the ridges which are met with in the upper part of the cavity, are but imperfect septa formed in the same way. These divide the upper part into small pockets or *Buchts*, as the Germans call them, which often contain polypoid tissue and which to my mind would offer an unsurmountable obstacle to any intranasal operations. Sanguine operators believe that efficient drainage leads to resolution and ultimately to restoration of these polypoid areas to a normal healthy mucoperiosteum. When in Europe two years ago I took particular pains to find the views of the leading specialists in England and Germany. Needless to say there is a wide divergence of opinion regarding the curability of these conditions and also to methods. In 1910 during a stay of a few months in Vienna I was anxious to see some of these patients treated surgically. Professor Hayek at that time informed me that he had not operated upon a case for four years. This was probably due to the publication of fatal results following operation by Killian and other distinguished rhinologists. A scare had set in and this probably awoke a strong desire to find an intranasal route which would be effective and free from risk. Intranasal operation,

however skilfully handled even by men possessing an unrivalled knowledge of the minute topography of this region combined with delicate touch, is not yet within the domain of safe surgery. Later in this paper I hope to discuss the different forms of operation, intranasal and extranasal, for the purpose of contrast and guidance in the selection of our mode of attack.

The original Killian operation was intended to secure free admission to all parts of the sinus, so that no focus of infection would escape detection and at the same time a minimum of deformity would be produced. The process of cure in these cases depended upon free drainage and ultimate obliteration of the cavity by the ascent of the orbital fat into the space above. It is quite comprehensible that the amount of orbital fat in large sinuses would be insufficient for this purpose and as it is just those cases that are suitable for this operation, it still left something to be desired.

There is a great tendency for the infundibular opening in the course of healing to contract and in this way to diminish the area of drainage. Were this to happen, pus would accumulate above the point of outlet and lead to failure. This operation, if these objections could be overcome, would be an ideal surgical procedure inasmuch as the scar remaining would in course of time be almost unrecognizable. It is quite on the cards that a great many men have found this operation unsuitable except in exceptional instances or it would have more followers today.

When the sinus is small, providing only a small space for the bridge, I have generally resorted to the radical operation, for in these cases the resultant deformity is slight. The great essential in all cases is the removal of all pathological products from the sinus, although the English school has many advocates for the retention of the mucoperiosteum. How this is to be accomplished when it is the seat of polypoid proliferation has always been a problem to me.

There is nothing more annoying than to have a patient return uncured and this has led me in many cases to prefer a radical operation in which the results are more certain. The radical operation especially is suitable to small sinuses. Even here we must make sure of creating an opening sufficiently large to provide against subsequent contraction and closure at the infundibular end. I have generally used Tilley's burrs for this purpose, following up the operation by the insertion of a large drainage tube maintained *in situ* for fourteen days, if circumstances allow. This will give the soft tissues sufficient time to coapt themselves to the posterior wall and to succeed in the complete obliteration of the cavity. It is surprising how even in these cases after the lapse of many years a small abscess will form from bacteria which have lain dormant.

We recognize the fact that in all suppuration cases the patient possesses a low form of resistance and a corresponding inability of the blood stream to

contend against germ life. This may be due to leucocytosis and a delayed restoration of the blood to its normal composition.

Our choice of even external operations is not limited to those I have just mentioned. The senior surgeon of Saint Bartholomew's Hospital advocates a method from which he secures a cure in three or four months' time. The assistant surgeon, Dr. Bedford Russell, who by the way is a native of Melbourne, when discussing frontal sinus suppuration with me expressed the view that this operation which I am about to describe, was the outcome of experience in the Great War. And I believe Howarth has advocated the same method which to my mind is the revival of what was done at Moorfields Eye Hospital at a time when ear, throat and nose hospitals did not get sufficient recognition. However, to be brief, it consists of making an opening through the orbital ridge and inserting through the infundibulum a tube attached to a silk thread which is left outside. The mucosa is left intact and this thread is utilized for the purpose of introducing tubes of gradually increasing dimensions, so that in time the infundibulum is widened to its fullest extent. No injury is inflicted upon the mucosa in this region and so contraction which would otherwise occur, is prevented. Pus freely flows over the edges of the bony and soft tissue wound in the forehead and to my mind would expose the bone to infection which would lead to an osteomyelitis. I happened to mention this method to Dr. Treacher Collins whose clinical assistant I had the good fortune to be for a year. He said: "Don't you remember this was our method at Moorfields?" I rejoined "Did you cure the cases?" which was answered in the affirmative.

Cases which are not of a chronic nature might be cured in this way. I have cured some patients in my early days in practice quite simply, but it is when you meet with chronic types not uncomplicated that the difficulty arises.

At University College the assistant surgeon who had formerly been at "Barts" for some years expressed great doubts about the cure coming now to the German school. I had the opportunity of seeing Halle and von Eicken operate. Halle's external operation consists in removing the inferior wall and leaving the anterior and with a burr he cleans out all the pockets, removing every vestige of mucosa and even burring the surface of the bone. Of course the posterior wall has to be handled gently in this part of the operation. He emphatically declared that all his sinuses got well in this way and his statement was proved in the case of a second operation. The patient complained of frontal pain which continued some time after the first operation. Nothing was found at the second operation.

An operation devised by Professor von Eicken appealed to me, as it seemed to be very rational and free from objections than most others. An incision is carried from the supraorbital notch curving round over the nasal bone and ending just above the infraorbital foramen. Part of the nasal bone is removed

after the sinus is opened just below the orbital ridge and then part of the ascending process of the superior maxilla. This allows a free inspection of the ethmoid when the patient is in the recumbent position and if the middle turbinate has been removed, you get free access to the sphenoidal opening. When the ethmoid is removed, which is easily accomplished without running the risk of removal in the dark by the sense of touch, an opening large enough is left to admit the index finger. A drainage tube is inserted and in front of this is placed a Gummi finger stuffed with gauze. These occupy the whole opening. A skin graft is then taken and placed over the Gummi finger with its fresh or raw surface outward. When this heals you have a skin surface on the inner side to prevent contraction. He does not interfere with the mucosa in the sinus.

Von Eicken's operation has many advantages—small scar, free access to the ethmoid and to the sphenoidal sinus if necessary, permanent wide opening for drainage purposes, fewer attendant risks than many others. The author of this operation told me that he had done twenty-one operations by this means which were all successful. Only one doubt remains in my mind as to the invariability of cure and that is the complete restoration of the mucosa. In a case somewhat parallel in the final stage of the operation in which I had cleaned out all polypoid tissue from the cavity, established a permanent opening of considerable size and disinfected it carefully, the wound in spite of every care continued to discharge. This gives one the impression that the infection is deeper than the cavity lining and shows there is some justification for Halle's method of burring away to a depth exceeding that of the intraosseous membrane.

The retention of the mucosa which is advocated by many surgeons, is no doubt for the purpose of avoiding any disturbance of the intimate blood supply relations which exist between the bone and itself. The membrane is ciliated and I think it is probable that, although we know the function of these cilia, we do not realize their supreme importance.

There are a number of other operations external in character, each of which has its own advocate.

The double osteoplastic of Beck is picturesque and probably very effective. We have not sufficient data to rely upon for a guide. It is mentioned here and there, but not many cases apparently have come before the profession.

Many men lay down the rule that no external operation is justified until the intranasal route has been thoroughly tried. We all know that acute and subacute cases can be cured without operation. Some require careful supervision owing to the swelling of the mucus membrane in the region of the infundibulum, producing retention of inflammatory products. I have found Prince's sounds highly useful in these cases and in one case in which the history was of a chronic nature, I succeeded in curing the patient entirely.

Of the intranasal operations, Halle's and Good's are probably the best.

EXPERIENCES IN THE TREATMENT OF VOLUNTARY PATIENTS AT THE PSYCHIATRIC CLINIC, BROUGHTON HALL.¹

By S. EVAN JONES, M.B. (Sydney),
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THE Psychiatric Clinic, Broughton Hall, was opened in 1921 for the voluntary admission of patients suffering from psychoses, psycho-neuroses and allied conditions. During the first twelve months one hundred and twenty-four patients were admitted and during the present year four hundred patients have been admitted. The rapid increase seems to indicate that a hospital of this nature fills a public demand. A comparison has been made between the types of patient admitted to Broughton Hall and those admitted to the ordinary mental hospitals. Excluding from consideration patients with neurasthenia and hysteria, who represent about one-third of our admissions but are rarely seen in mental hospitals, it was found that the proportions of patients suffering from the different types of psychoses admitted to Broughton Hall were about identical with the proportions of those admitted to the ordinary mental hospitals. There are, however, two exceptions, the proportion of melancholic patients is much higher and the proportion of manic patients much lower at Broughton Hall than in the other mental hospitals.

It is obvious, therefore, that voluntary or in effect ordinary hospital standards of control are widely applicable in the care of certifiable psychotic patients. The special conditions met with in these cases which have not to be guarded against in ordinary hospital management, are the antisocial tendencies of such frequent occurrence, the chief of these being suicide and homicide. Patients with homicidal tendencies can be controlled only under rigid institutional conditions.

Suicidal patients are in a different category. If safety first is to be regarded as the principal dogma in the care of mental patients, then all sorts of mechanical restrictions become necessary and the patient who has no antisocial tendencies suffers the undesirable loss of liberty and sense of freedom and independence along with the other patients. The attitude that was adopted in laying down the policy of administration of Broughton Hall, was the avoidance of all forms of restraint and restriction both mechanical and personal on the grounds that it was justifiable to risk the occurrence of accidents (suicides) in a small number of cases in order to treat the great majority of the patients under conditions of freedom and lack of personal restraint.

Whether this policy is correct may be a matter of opinion. There has been a number of suicides, but most have occurred in patients who could not be safeguarded under the present state of the law; that is, they were non-certifiable patients suffering

from neurasthenia—the group which supplies the Coroner's Court almost daily with material for inquests. Since the Hospital was opened, safeguards have been introduced by blocking the windows, but restrictions in the way of fences about the wards have been removed and patients who are not confined to bed, are allowed the liberty of the grounds and in many cases to come and go from the hospital for shopping *et cetera*.

It is not easy to estimate the general influence of a hospital of this nature on the admission of certified patients, but in view of the increasing number of admissions it is certain that a considerable number of certifiable patients could be treated on these principles, reducing the number of patients in the early stages of mental disease admitted to the ordinary mental hospitals. Since the psycho-neuroses are dealt with, the hospital takes a class of patient which formerly had difficulty in obtaining admission to ordinary hospitals for treatment.

The test of the effects of treatment by the recovery rate is not readily applied to nervous and mental disorders. In many instances the symptoms are the expression, not so much of disease affecting an individual and running a more or less well known course, but of social conflict, the symptoms being determined by the temperament of the individual concerned and the special character of his or her environment. Many of these disorders have a cyclic or periodic recurrent nature. This subject, however, cannot be pursued, as it opens up the realm of psycho-pathology. A practical test of recovery in these cases is the social criterion, that is, whether the patient is able to return to and continue to live effectually in his accustomed environment. This might be termed the test of social recovery. The statistics of mental hospitals give recovery rates varying between 25% and 50%. Last year at Broughton Hall results showed a recovery rate of 50% and a further 20% of patients were discharged improved.

Practical Psychotherapy.

There are a number of well-established psychotherapeutic measures some of which are specially applicable to certain groups of patients.

The first question that crops up in this connexion, is the suitability or otherwise of the patient for treatment as an outdoor or indoor patient on a voluntary or compulsory basis.

Experience has shown that psychotic and neurotic patients may be classified into three groups from the point of view of their attitude to treatment. The first group is anxious for treatment and will submit voluntarily to advice. Another group, usually the psychotic type, is unable to recognise the necessity for treatment, whilst the third is indifferent.

Considering that the basis of all forms of psychotherapy is the establishment of an affective relationship between physician and patient, the second group is for all practical purposes excluded from the benefits offered by a clinic except in so far that the

¹ Read at a meeting of the Central Western Medical Association, New South Wales, on June 23, 1926.

relatives may be advised as to what steps are necessary to be taken for the care and protection of the patients and others and whether certification should be carried out.

The first and third groups are suitable for treatment at a clinic and the next question arises as to whether indoor or outdoor treatment is desirable. There are certain general principles to be taken into consideration here. With the recognition that the neurosis or psychosis may be resultant of conflict between an individual and his environment, the question must be asked in any particular case whether it is desirable for the patient to remain in his or her previous surroundings during treatment. Even if the fault is not in the environment but in the patient, it may be desirable to effect a temporary separation. Frequently nothing more than a change of residence, a holiday or a sea trip is necessary. In other cases and almost invariably when the symptoms are psychotic, that is when the patient is certifiable or unmanageable at times, the removal to a hospital should be recommended.

Even in many of the psychoneurotic cases treatment is simplified by indoor hospital treatment. It should be remembered, however, that psychoanalysts consider it better for the patients to remain in their accustomed environment so that the symptoms may be kept active and the urge to seek relief will remain pressing. This brings up the important question of the ambivalent attitude of the neurotic to his symptoms, on the one hand he seeks help, while, on the other hand, he clings to his disorder and does not really desire to recover. One of the great difficulties in treatment is to instil and encourage the will to recover.

In general terms it may be stated that the group of patients who are most susceptible to treatment as outdoor patients are those suffering from conversion hysteria. The patients with anxiety neurosis and neurasthenia for the great part require change of environment. Patients with chronic, mild psychoses may, if home conditions are suitable, be treated outdoor.

Certain types of patient may be considered as distinctly unsuitable for treatment on a voluntary basis, namely dipsomaniacs and those affected by drug habits. The immediate results of treatment in these cases are satisfactory, but with the disappearance of acute symptoms passes the patient's insight into his condition and he does not appreciate the necessity for prolonged abstinence. The powers of the *Inebriates Act* might be used more freely in these cases.

Acute alcoholics, of course, need institutional treatment in order that the alcoholic dose may be progressively reduced under strict conditions.

With regard to the morphine habit no mode of treatment is effective in obviating abstinence symptoms and during this stage close observation is essential. A rapid withdrawal of morphine and its substitution with hyoscine administered to the extent of producing delirium is probably the most satisfactory mode of treatment.

Outdoor Patients: Conversion Hysteria.

The group of patients suffering from conversion hysteria in which physical symptoms are present, such as paralysis or paresis of muscles, contractures, tremors and emesis, disorder of gait *et cetera*, are generally speaking suitable for outdoor treatment by various forms of suggestion, hypnotic or waking. These methods are greatly assisted by massage as a vehicle for the suggestion and by reeducation in cases of paralysis, aphonia *et cetera*. In all these cases of paralysis the psychological attitude of the patient is one of inability to perform the action that is prevented by the paralysis. There is an active element too of not desiring to perform the action. It will be found that if an attempt is made to move passively a paralysed limb, a contraction is set up in the muscles opposing the movement; the same thing is observed if the patient is told to try to move the limb; the agonists and antagonists are both tonically contracted producing a state of immobility and increased resistance to passive movement. In treating such a patient by reeducation the first consideration is to obtain relaxation of all muscles, massage is very helpful here and it is often seen that a patient who goes to the massage table rigid and tense, will become quite flaccid after a few minutes gentle massage. Once the patient is taught to relax, all tremor disappears of course, since the tremors are due to rapidly alternating changes in the tonus of opposing groups of muscles.

The patient begins to recognize his improvement and becomes more ready to accept the next suggestion for movement in cases in which the paralysis remains.

The faradic current is useful here to demonstrate the capacity of the muscles to contract and in practice a number of dodges will be picked up to convince the patient that he has the power of movement. In reeducating as to movements it is necessary to start with simple movements of small range, in fingers in case of upper extremities gradually extending them until the larger proximal joints are used and a wide range of movements are obtained. The patient is instructed in a special form, he is not told to try to perform the movement which at once arouses the opposite idea that he cannot do so, but to think of making the movement which does not arouse antagonism. The movement is then performed passively. The existence of an idea in the mind is always accompanied by a partial centrifugal psychomotor outflow which prepares the paths and muscles to give the idea expression. This is shown very graphically by the idea of Chevreul's pendulum and is a dynamic aspect of psychology that has been too much neglected, though Munsterberg made it the chief feature of his teachings. This principle has a general application in all realms of psychotherapy and psychopathology, that is, it is the expected that happens. There is a reverse aspect too that is of possible use in treatment, namely, that movements expressing ideas and emotions even if performed mimically tend to arouse in the mind the appropriate emotions; in mild depressive cases this has some value in treatment.

To return to the conversion hysteria, the effect of the treatment now should be to have restored to the patient confidence in his ability to perform the functions that have been inhibited, and the cure may be considered complete for our purposes. It must be born in mind that all forms of hysteria are based on a psychological series of events and there is a psychological reason for every manifestation. Complete recovery can be obtained only by a progressive analysis which will bring all these factors to light. This, however, is not possible for patients who are treated at a clinic both on account of the time involved and of the absence of other factors necessary, the principal of which is adequate payment by the patient for the treatment.

However, occasional cases occur in which a moderate degree of analysis is justified and effective, as for example the case of visual hallucinations reported by Dr. Edwards.¹

Anæsthesia.

Anæsthesia may be treated on similar lines to the paralysis. In these cases faradism with the use of brush electrodes should be applied to demonstrate to the patient his capacity to feel by promoting stimuli which break across his raised threshold.

It may be remarked here that a great many of the hysterical symptoms may be ignored, the anæsthesia for instance has little practical significance and is curiously ambiguous. For example, while the patient has not consciousness of feeling yet the sensations are made use of, this is illustrated by Janet's test and the case of a girl with anæsthesia of the hand who was able to pick a coin off the table. In Janet's test when sensation is being examined in an hysterical patient, the patient is instructed to say "yes" when he feels the pin and "no" when he does not. Quite frequently the hysteric says "no" when the anæsthetic area is touched. Sensation was reeducated in this case by commencing with faradism, passing to the use of very coarse sand paper through finer degrees to fabrics. In very many cases anæsthesia is suggested by the examiner and as remarked above no great attention need be paid to this type of hysteria symptoms.

There are certain factors that must be taken into account as tending to retard recovery in hysterics, the unconscious motive for the illness is all important. In some cases the motive may be slight, in others of great weight. An attempt should be made to discover and to deal with it and to bring it to the patient's realization. Workmen's compensation cases offer peculiar difficulty in treatment. In these circumstances an actual premium is placed on the patient's disease and the patient is compensated for his mental inefficiency. If the payment of compensation in such cases is justified, it should take the form of a lump sum and not weekly payments.

Amnesia is a characteristic of all kinds of hysteria and in fact is the peculiarity of the disease. The

patient forgets how to perform a certain action *et cetera*. In some cases, however, the amnesia is the outstanding feature and may cover any period from a few minutes to hours or even to the whole of the patient's life. In some of the latter cases the patient's general habits become consistent with the period of life to which the amnesia extends, a condition known as hysterical puerility and the patient may become babyish in manner, speech and personal habits.

This group of patients seems peculiarly susceptible to hypnotic treatment and in cases of somnambulism the lapsed memories are readily recovered. When the amnesia covers larger periods of time, for example the greater part of a patient's life, successive treatments are necessary gradually to build up *ab initio* the patient's life. During the course of the treatment we see the patient, as it were, live anew his past life.

Another group is that of the anxiety neuroses. In anxiety hysteria which is characterized by recurrent attacks of anxiety, acute distressing episodes to the patient in which she feels apprehensive and suffers the physical concomitants of fear, palpitation, vasomotor disturbances, gastro-intestinal discomforts and oppression. Attacks are provoked by trivial causes and these patients are not very easily treated under outdoor conditions. Prolonged rest and isolation from friends are desirable, for example a Weir Mitchell course of treatment.

Neurasthenia.

The psychology of neurasthenia may be regarded as a disorder of attention as opposed to the amnesia of hysterics. All these patients are intensely introverted, pay excessive attention and take great interest in their somatic sensations. As a result of this continued introspection and diversion of interest the threshold for these stimuli is lowered and visceral sensations are exaggerated. The patient regards and analyses his feelings in great detail and ultimately in the severe cases becomes estranged from his environment, his consciousness is filled by somesthetic sensation and external stimuli obtain little notice. As an example I may mention the case of a male patient who was living under very unsatisfactory domestic conditions. He had an attack of influenza, but convalescence was prolonged into a neurasthenic state of fatigue in which the patient's thoughts were concentrated on the physical sensations coming from his muscles.

The more intelligent of these patients may be treated by Dubois's method of argument and reasoning and be persuaded to realise the true explanation of their symptoms. Other patients will not respond to this method and prolonged and absolute rest with overfeeding is necessary.

Various pharmacological adjuvants are useful—strychnine in large doses and pressor drugs to relieve the condition of hypopisia which is often present.

The group of cases labelled psychasthenia and including morbid impulses, fears and obsessions is from the psychological point of view closely related

¹ Dr. Edwards showed that the hallucination (of a caterpillar) was traceable to the repression of an eventually very painful incident in the patient's life.

to hysteria and susceptible to treatment on the same lines. These patients are suitable for analytic therapy.

The Psychoses.

Those patients in whom there are active psychotic symptoms and who are estranged from their environment, are only suitable for institutional treatment, but the patients suffering from milder conditions, especially the milder forms of melancholia or mania, may be treated at home under the same general principles of treatment as for neurasthenia and anxiety neurosis. The necessity for absolute rest in mental and nervous exhaustion is not sufficiently appreciated and patients should be taught physical and mental relaxation to avoid the accompanying wastage of mental and nervous energy.

In all forms of psychotherapy the fundamental requirement is the establishment of *rappor*t between patient and physician; this relationship is the lever by which the various symptoms are removed. It should be one of sympathetic understanding and friendly interest and every effort should be made to regard the illness and its symptoms from the patient's point of view. The attitude of relatives often interferes with efforts at treatment either in an excess of sympathy or in intolerance of the patient's complaints. A removal from the contact of over zealous or indifferent relatives is always to the benefit of the patient.

A word might be said about the risks in psychotherapy. The most serious of these is suicide. There are two groups in mental and nervous disorders which are characterized by suicidal impulses, namely melancholia and neurasthenia. The risk is the greater in the latter group because there is no profound emotional depression and the presence of suicidal impulses may not be recognised. Melancholia is frequently associated with ideas of self-destruction, but there is also an accompanying retardation of thought and action which safeguards the patient from carrying an impulse into action.

Aids to Treatment.

A few words might be said about collateral aids in treatment.

Massage.

In itself massage has little direct curative influence, but its benefits lie in its influence in reducing states of nervous tension and inducing relaxation. As many patients as possible are given massage at Broughton Hall and in our experience about 75% sleep during or immediately after the treatment—sufficient evidence I think of its soothing effect.

Trained *masscuses* are able also under medical direction to carry out much suggestive therapy both in hysterics and the psychotic patients; muscular reeducation and training comes of course within the sphere of massage.

Electrotherapy also is useful for its suggestive effect in both galvanic and faradic forms.

Occupation.

Occupation is one of the practical difficulties in dealing with psychotic and neurotic patients and to find suitable occupation. In most cases there is deficient capacity for concentration and loss of interest in the ordinary activities of life. All convalescent patients should have their time filled in by arranging games, such as tennis *et cetera* and providing various forms of handicraft occupation, so that at the end of the day the patient may be healthily fatigued and ready to sleep. All forms of social entertainment are also of great value, as so many of the neurotics are socially ill-adapted and have never experienced the pleasures that come from social intercourse.

Reviews.

ESSAYS OF A SURGEON.

A VOLUME from the pen of Bland-Sutton is an event in the world of medicine. In his "Orations and Addresses" he deals with a wide range of subjects and whether it be the student of medical history or the practitioner interested in the aetiology and pathology of tumours or the observer, keen on the comparative analysis of the phenomena of heredity or of sex or the army surgeon, recalling his war experiences with wounds, all will find in his delightfully lucid, original and often humorous handling of their pet subject some new aspect, some fresh and illuminating sidelight.¹

Among a multitude of good things one may note a brief but valuable study of the conditions in Portugal, where Hunter, who is evidently his hero in medicine, spent a brief period (1762-1763). He explains his own interest in comparative biology thus: "In the simple religious exercises of my childhood the story of Adam and Eve, the first keepers of a zoological garden, and the famous exploit of Noah, collector and preserver of wild animals, had great charm for me" and then the reading of Ottley's life of Hunter as a boy made him a heroworshipper of that extraordinary man.

Hunter's fame began and still centres round his great museum now in Lincoln's Inn Fields. Hunter, we are told, investigated the specimens, "the nondescript animals of that settlement" that John White brought back to England in 1790. The marsupials puzzled him and he especially tried to breed opossums, but without success. Indeed, it was over a century before the journey of the blind foetus from vagina to pouch was described. His delight in the quaint and unusual Bland-Sutton exhibits in a study of shrunk heads earplugs and labrets among the cannibals of the Amazon. "My father," he says, "taught me to stuff birds at the time my mother stuffed me with the Ten Commandments." "Later in life I saw savages ornamented with feathers, skin, teeth and claws in tropical forests; similar decorations are worn by fashionable beings who strut in Piccadilly or parade the paddock at Ascot." It was said that a certain Australian professor whose interest in anthropology is well known, was impressed with the same idea, for when attending an investiture at Government House he was heard to murmur: "How like a corroboree!"

Of more serious importance are his views on the relationship of bacteria to the toxicity of cancers, on the habits of tumours, on the peculiar characteristics of villi in

¹ "Orations and Addresses," by Sir John Bland-Sutton; 1924. London: William Heinemann (Medical Books), Limited. Royal 8vo., pp. 173, with 51 illustrations. Price: 10s. 6d. net.

the choroid plexuses and the arachnoid tufts as shown in hydrocephalus and in pachycephalum tumours.

Comparative anatomy is illustrated by studies of the glandular pantheon. He discusses the cock-feathered hen, the duck in drake plumage (from Hunter), caponization and ostrich feathers and disarming the skunk.

Surgery and the surgeon, whether of the past or the future, draw from him shrewd comments fitting of a master of the art.

Hunter's early outdoor life and mechanical genius as a carpenter he uses to emphasize the value of craftsmanship. Hunter, too, like many modern surgeons "while waiting for patients taught human anatomy for capital and comparative anatomy for interest."

"Passion for scientific work delays a young surgeon when making a practice, but it is a sure rock to build on and, though practice may come slowly, it comes surely and persists."

"Traditions and methods die hard. An old pupil of Guy's came to see a modern operation under an anaesthetic; the old fellow sighed when the advantages were pointed out and said he had a fancy for the old ways and liked to see some blood and sawdust about!"

"In the first half of the nineteenth century the arena of an operating theatre smacked of the bull ring."

Anæsthetics abolished toe the iron bars on the walls and the ring bolts let into the floor for the attachment of cords and pulleys used in forcible reduction of dislocation; nowadays it is as slick as a conjuring trick.

"Let us satisfy ourselves," he asks, "that surgical gambling with malignant disease is justified" and criticizes the treatment of the malignant cervix and colon. "Septicity," he says, "decides the virulence of the cancer." "The risks in cancer of the colon are still as great as in pre-Listerian days."

He is very caustic about the failure of elaborate surgical ritual in these cases. "Surgical coquetry," he calls it, "as clumsy" in dealing with bacteria "as attempts to kill fleas with bludgeons."

Perhaps we may yet attack the streptococci by some bacteriolytic chemical through the blood stream, which will destroy parasites, but does not kill the tissues of the host.

"Surgeons are of two types, the craftsman and the biologist." The good craftsman uses and invents simple tools. Bland-Sutton acknowledges the use, however, of various lamps and X rays and alludes to the "dramatic spectacle of watching a shrapnel ball in a cardiac ventricle rapidly moving in its orbit." He cannot help noting, however, that "the oesophagoscope requires for its successful use a surgeon with the instincts of a sword swallower and the eye of a hawk."

"Above all," he considers, "the surgeon must fix his attention on the men along the skyline—bacteriologists, experimental physiologists, physiological chemists and physicists; the future lies with them." "For men ambitious to attain high places in surgery the high road lies through the pathological institute."

Such are a few of the remarks which fill this fascinating volume, a book no student of surgery or medicine, undergraduate or graduate should fail to read.

DIATHERMY IN PNEUMONIA.

"Diathermy with Special Reference to Pneumonia" (1926) is a second edition of the book by Harry Eaton Stewart which appeared in 1923.¹ Containing a brief but clear account of apparatus and technique for "medical" and "surgical" diathermy, the volume deals mainly with its effects in the treatment of lobar pneumonia. A strong case is made for an extended trial of this comparatively new method. The author does not definitely claim a reduction of mortality owing to the small number of cases observed;

¹ "Diathermy with Special Reference to Pneumonia," by Harry Eaton Stewart, M.D.; second Edition, Revised; 1926. New York: Paul B. Hoeber, Incorporated. Crown 8vo, pp. 248, with illustrations. Price: \$3.00 net.

but in the series quoted such was the case, the controls being as far as possible similar types of disease and from the same class of the community. Diagnosis by physical signs was checked by X ray and laboratory findings, the various types responding equally well. It is urged that diathermy be started as soon as the diagnosis is made, before the third day if possible. The most pronounced effect of this treatment is on the temperature which abandons its classical behaviour to fall by lysis. The fall begins almost immediately after the commencement of treatment. Pain is promptly relieved, respiration and pulse improve in character and cyanosis is often eliminated. Blood pressure falls slightly, but the author has ceased to regard this as a contraindication, even when it is low before treatment has commenced, as he has seen no ill effects from the resulting fall. Treatment consists of applications given from once a day up to as often as every four hours when there is much distress.

In influenzal, hypostatic and ether pneumonia good results were not obtained and in these conditions the author thinks diathermy is contraindicated. In lobar pneumonia there is practically no contraindication to its use.

The book is well printed on good paper, the illustrations from photographs are of machines and appliances and also of patients (presumably suffering from pneumonia although they have not that appearance) receiving treatment.

AN X RAY ATLAS.

A USEFUL work entitled, "A Descriptive Atlas of Visceral Radiograms" by A. P. Bertwistle and E. W. H. Shenton has come to hand¹. It is a great advance on any British radiographic publication and is certainly equal to anything yet produced in America. The radiographic appearances of the various organs both in health and disease are clearly set forth. The different conditions are considered under the headings of the various body systems and where explanation of a radiogram is necessary, a line drawing is inserted rather than a disfiguring labelling of the original radiogram. In this manner the normal and pathological conditions of the systems are set out in order: Alimentary, urinary, respiratory, nervous, vascular, nasal, thyreoid and female generative systems. The first twenty-five pages are given up to a description of the various lesions met with and the amount of help which an efficient X ray examination may give. Normal appearances are first illustrated and then such lesions as ulcer, malignant disease, appendicitis, gall bladder and colonic disease. The radiograms reproduced are all well chosen and should be very helpful for reference.

Gall bladder radiography has been greatly helped by Graham's method of administering iodine salts (which are secreted into the bile and allow of pictures of the gall bladder being taken) and the authors reproduce several such radiograms. The renal system radiograms include many of calculus and also many valuable illustrations of the pyelographic appearance met with in lesions such as hydronephrosis, tuberculosis *et cetera*. A good deal of space is given to the author's method of localizing lesions in the brain and also the localization of spinal tumours by the injection of "Lipiodol" into the spinal canal. The illustrations of the normal chest are better than those usually seen in that they show the great amount of marking seen in a normal lung and this should lead to fewer misinterpretations of disease, when the chest is really normal for that person's age and occupation.

The section on dental radiograms is rather disappointing and the illustrations were apparently taken with the ordinary large apparatus and not with special dental X ray units, as the pictures show much distortion. The head sinus work also is below standard.

The work is a valuable one and should be of great help to the specialist as well as to the ordinary practitioner.

¹ "A Descriptive Atlas of Visceral Radiograms," by A. P. Bertwistle, M.B., Ch.B., F.R.C.S.Ed., and E. W. H. Shenton. M.R.C.S., L.R.C.P.; 1926. London: Henry Klinck. Crown 4to, pp. 270. Price: 21s. net.

The Medical Journal of Australia

SATURDAY, SEPTEMBER 4, 1926.

The White Man's Obligations.

THREE years ago at the second session of the Pan-Pacific Congress there was a full dress discussion on the problems emanating from the depopulation of the Pacific. The subject was not new, but this discussion seemed to endow it with a new aspect, the aspect of a determination to stem the horrible tide of destruction which the advent of the white man has brought in its train. It was freely admitted that it was the white man who had introduced disease, who had induced the Pacific natives to indulge in alcohol, who had disturbed the natives' social organization and customs and who had placed in their hands firearms and other western weapons. The Pacific is not the first field that the white man has tarnished. With his superior intellectual equipment, with his more elaborate language and means of communication the "civilized" white man has entered the territory of the "savage" native and has either driven the latter to immediate dissolution or forced upon him practices, customs and diseases which have inevitably led to the physical, mental and moral ruin of a simple and worthy race. It will be noted that the white man claims his right to conquer on the ground of his superior knowledge of right and wrong and on the ground of his civilization. This word is derived from *civicus*, a city; while he refers to the native as a savage, a word that has been evolved from *silva*, a wood. The city dweller maintains his superiority over the child of Nature, the inhabitant of woods and glades. He has penetrated the native stronghold, taken the native under his tender care, annexed his territories and exploited his labour. He persuades himself comfortably that the heathen native is benefited by being brought under the influence of Christianity and closes his eyes to the fact that under western influence the moral code of the native, a code he has followed implicitly as long

as he was undisturbed, is shattered and in its place he wins the easy morality of his civilized conqueror that defies divorce courts and makes sport of vows. The white man is full of regret when he finds that the death rate among the conquered natives rises rapidly. There is no question that his territory should be returned to the native; the new land must be held in trust for the native until he has acquired all the advantages of civilization or until he has disappeared from the face of the globe.

At the Pan-Pacific Congress the proposition was broached that a Pacific medical service should be established under the auspices of the International Health Board of the Rockefeller Foundation. All the great nations owning territories in or bordering on the Pacific Ocean were to participate in the establishment of this service. The actual welfare of the native was to be placed under the care of the service. Inquiries were to have been undertaken into the prevalence of the various infective processes which the white man had handed to the native. Measures were to have been devised to stem the excessive mortality and to save the native races from the threatening extermination. Three years have passed and nothing has been done. The white man's obligations seem to lie lightly on his shoulders, when the objective is a dying race.

At last a ray of light has penetrated the dark clouds in the Pacific. Dr. Cilento issues a wholesome message this week from the Territory of New Guinea, where he is Director of Public Health and thus responsible to some extent for the medical care of the natives. His discovery of the insufficiency of the diet given to the indentured native labourer by his white masters and of the effect of this economy is timely. His championship of the rights of native workers in New Guinea must be applauded. That it is by no means a light task to introduce a reform in the dietary of the native labourer will be recognized at a glance from Dr. Cilento's interesting article. If Australia is to bear the responsibility of government of New Guinea and of Papua, Dr. Cilento's warning must be taken to heart. Australia is known as the working man's paradise. The aboriginal native is rapidly approaching his term; Australia has become the

white man's country and every man who works in this great empty continent, is guaranteed reasonable hours of labour, decent living conditions, ample wages and proper facilities for wholesome food. Next door to this vast mainland Australia tolerates the exploitation of the native; the starvation diet, the hard toil under the burning sun without those safeguards that are regarded as essential at home.

The remedy of the unsufficient and unsuitable diet of the native is not enough. The white man has no moral right to impose his customs and authority on the native unless he can do so without physical, mental or moral detriment to the latter. There is an admirable medical service in New Guinea under the control of a strong, courageous leader. The powers of the medical service are not extensive enough nor is the service large enough to render it possible for Australia to meet its obligations. If trade is to be carried out in New Guinea and Papua by the white man, the authorities must adopt stringent measures to prevent its success being at the cost of native health and life. The cost of a medical service of sufficient magnitude to enable it to fulfil its functions adequately may be greater than the present conditions of administration will allow. If this be so, then the trade must be made to pay for the service. We have waited impatiently for a Pacific medical service for the real benefit of the native races. In the absence of any progress, we now claim that the medical services of Papua and New Guinea be strengthened and given fuller powers, so that there may be a demonstration of a recognition of Australia's obligation to her dependent native races.

Current Comment.

SIMPLE TUMOURS AND MALIGNANT DISEASE OF THE LARGE INTESTINE.

PAPILLOMATA or polypi of a simple nature occur more frequently in the rectum than in any other part of the alimentary canal. In the rectum they may be sessile or stalked. Sometimes they resemble chorionic villi in appearance. The occurrence of a solitary simple polypus in the rectum is not *per se* a serious matter. They are in all probability present in the rectum relatively often. When polypi become

numerous and give rise to the condition known as polyposis, the condition is much more serious. Polyposis of the colon was discussed in the journal in the issue of June 13, 1925, in connexion with some work of Erdmann and Morris. Polypi and polyposis are of interest to morbid anatomists chiefly as far as their relationship to malignant disease is concerned. Many observers including Bardenhauer, Wulf, Verse and Doering have followed the transition of hypertrophic mucosa and papillæ into carcinoma and it will be remembered that Erdmann and Morris held that they were able repeatedly to demonstrate all morphological graduations from simple polypi through early infiltrative tendencies up to frank and undoubted carcinoma.

Ewing describes several varieties of benign polyp in the large intestine. There is the broad flat adenoma. It has a simple cylindrical celled adenomatous structure and its usual position in the rectum just above the squamous junction renders it specially liable to malignant change. The common pedunculated adenoma may be single or multiple. The multiple polypi are probably related to intestinal polyposis. The structure consists of large and small alveoli lined by highly cylindrical epithelium and often filled or distended with mucus. Carcinomatous transformation according to Ewing may begin at the base or tip or throughout the tumour. Villous papilloma is a well defined variety. It is characterized by a finely papillary appearance, great vascularity and haemorrhages and according to Esmarch has a pronounced tendency towards recurrence and malignant change. Intestinal polyposis is considered by Ewing under a separate heading. The early stages of polyposis are described by him as consisting of a diffuse hypertrophy of the entire epithelial lining. He regards this as supporting Verse's view that the sole element in the predisposition is the excessive reaction of the epithelium to irritants. The carcinomatous process usually begins in a single polypus, involving others later. It should be pointed out that the formation of a stalk of a polypus is the result of mechanical stress. Bland Sutton describes the stalk as being a fold of mucous membrane induced by the drag of the polypus.

The relationship of simple tumours of the large intestine to malignant disease has recently been discussed by Dr. Cuthbert Dukes.¹

Dr. Dukes discusses the subject from several points of view. He describes the development and structure of simple adenomata. His observations are based on three cases of multiple adenomata and on more than sixty specimens of adenomata, polypi and villous tumours. Adenomata arise from small areas of increased epithelial growth. Growth of the epithelial coat causes a projection into the lumen of the bowel and this is accompanied by a bowing of the *muscularis mucosæ*. By means of this formation the bowel wall is able to accommodate an increased surface of secreting cells, but this advantage is

¹ *The British Journal of Surgery*, April, 1926.

obtained at the cost of serious injury to the hitherto unaffected cells at the boundary of the young tumour. These marginal cells become compressed and the crypts stunted; the constant friction leads to "collar catarrh." Dr. Dukes points out that this description of the mechanics of tumour formation is built upon the supposition that the only operative factor is a multiplication of epithelial cells within a defined area. It is obviously opposed to the view that adenomata owe their origin to some submucous structure such as a lymphoid follicle causing the secreting cells to bulge into the lumen of the gut. Dr. Dukes could find no evidence of this. He adds that chronic inflammation is a frequent precursor of tumour growth, but that if any such antecedent influence had acted on the tumours studied by him, it left no permanent imprint on the tissues.

Dr. Dukes examined one hundred and twenty-seven intestines taken from the bodies of patients who died of diseases other than carcinoma of the rectum. He searched the mucosa for simple tumours from caecum to sigmoid. In twelve one or more tumours were found. In one of these six tumours were present, in one instance four, in one two and the other nine contained only an isolated polypus. He also examined the specimens from thirty-three cancerous tumours of the rectum removed at operation and found associated adenomata in twenty-five instances. Dr. Dukes holds that it would be wrong to assess these figures as representing the average frequency of this association. The adenomata were all found in the immediate vicinity of the cancer; at operation only a small portion of the bowel is removed and he had no opportunity of examining the mucosa of the remaining part of the bowel. Although he recognizes that certain reservations must be placed on the statement, he concludes that adenomata are found in the bowel between the caecum and sigmoid in about 10% of the population, but are almost invariably present in the mucous membrane surrounding a cancer of the rectum. The adenomata surrounding malignant tumours are of the same structure as has been described above in connexion with simple adenomata. The same central connective tissue stroma is present and the same "collar catarrh" is found. Owing probably to this irritation secondary tumours arise in the neighbourhood. When the increased epithelial growth affects an area greater than can be compensated for by a projecting growth, some secreting cells are pushed into the region of the submucosa. Lymphoid tissue is increased round these ingrowths and follicles are formed. Dr. Dukes discusses the question as to whether the simple tumours preceded the cancer or whether they develop subsequent to the malignant growth. He points out that the fact that the cells of an adenoma are secreting vigorously is evidence of its age. The presence of mitotic figures, on the other hand, is a sign of rapid growth of the tumour up to the moment of its extirpation. Large deeply staining nuclei indicate tumours in which growth has recently taken place, but is not at the moment occurring. He has found that

adenomata accompanying cancer of the rectum are characterized by a mixture of cells secreting mucus and of cells with large deeply staining nuclei. In such tumours mitotic figures cannot be found. Polypi are usually covered by a layer of cells actively secreting mucus.

Dr. Dukes explains that on account of irregular growth and secondary bacterial infection little can be learned from mature tumours of their initial growth. He describes two early malignant tumours which he was fortunate enough to find. He reproduces a photograph of a tumour in which malignant degeneration is occurring at the tip of an established benign adenoma. In another early malignant tumour it is seen that the tumour has the structure of four adjacent independent tumours. The greatest depth of the cancer cells is in the supposed intervals between the tumours. He concludes that the tumour in this instance arose as a result of malignant changes occurring in cells between adjacent tumours which because of their position, were restricted in growth and suffered from "collar catarrh." Dr. Dukes holds that strong support can be gained for the view that cancers of the bowel develop in simple adenomata from experimental work on the production of tar cancer in mice. He believes that the small tumours arising on the painted area of the skin of a mouse are identical in appearance with simple adenomata accompanying cancer of the bowel. In his opinion the sequence of events in the formation of a cancer of the rectum is as follows. The epithelial cells of the mucous membrane covering an extensive area of the bowel are stimulated to a more vigorous growth in many separate spots. Later a crop of adenomata arise from this sensitive field, some eventually becoming surrounded by secondary tumours. The mucous membrane in the clefts between primary and secondary tumours is hampered in its growth and becomes folded inwards. He regards it as "possible" that these cells are the first to undergo malignant changes. Whether this be so or not, there is no doubt that the cells in the space between primary and secondary tumours are mechanically irritated and the evidence claimed for this is the "collar catarrh" previously described.

Dr. Dukes's work goes to confirm that of other workers that malignant disease may arise in a benign adenoma. His inability to find signs of inflammation in connexion with the appearance of benign adenomata is divergent from the conclusions of Erdmann and Morris. His description of the compression of cells and the formation of what he calls "collar catarrh," is interesting and though it is not unlikely that this may prove a source of irritation sufficient to give rise to malignant change, he produces no evidence other than the descent of malignant tissue between the four adjacent tumours that this actually occurs. There is only one lesion illustrated by him which may be described as an example of incipient malignant change and this lesion is situated at the extreme end of a polypoid adenoma.

Abstracts from Current Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

The Toxins of Haemolytic Streptococci Associated with Scarlet Fever.

MARY B. KIRKBRIDGE AND MARY W. WHEELER (*Journal of Immunology*, June, 1926) have undertaken an investigation for the purpose of finding an animal suitable for the standardization of streptococcal toxins and antitoxins and of establishing the importance of the presence of blood in the production of potent toxins. They also studied the toxins of a large number of strains of haemolytic streptococci from scarlet fever and other infections with reference to the skin reactions produced in goats and their neutralization by scarlet fever antitoxin. Mice, guinea pigs, rats, cats, chickens, monkeys, pigeons, sheep and a calf were all found to be insusceptible to intracutaneous injections, but goats, both short haired and Angoras, were found to be definitely susceptible. Full grown young goats weighing 33.7 to 45 kilograms (seventy-five to one hundred pounds) with smooth white skins provided the best reactions. The hair was clipped and removed with a depilatory (one volume of barium sulphide to one and a half volumes of starch). The dose of toxin was contained in 0.2 cubic centimetre. Reactions were read in eighteen to twenty-four hours and were found to have faded in forty-eight to seventy-two hours. In attempting to substitute the goat for the human subject in the standardization of streptococcal toxins and antitoxins it was found that the susceptibility of the goat is from one-third to one-quarter that of man. The approximate titre of different toxins for human beings could be determined by preliminary tests on goats. When toxins containing no blood were used and an interval of ten to fourteen days was allowed between tests, the same goat could be used repeatedly, but with toxins containing blood repeated intracutaneous injections produced hypersusceptibility. In studying the various factors necessary for toxin production, it was found that the most satisfactory medium was a beef infusion broth without blood, containing 2% "Defco" proteose peptone. The reaction should be pH 7.6. The authors carried out a series of observations on the value of the skin reaction as an indication of the susceptibility to scarlet fever and obtained striking evidence in its favour. The toxin production of one hundred and fifty strains of haemolytic streptococci from scarlet fever and from other infections was studied. Of those from scarlet fever 90% and of those from other sources 65% produced toxins which yielded a definite skin reaction in goats.

The Fragmentation of Red Blood Cells.

CHARLES A. DOAN AND FLORENCE R. SABIN (*Journal of Experimental Medicine*, June, 1926) have studied fragmentation of red blood cells in the circulation of the normal rabbit. They found that a constant fragmentation of the red cells occurred and that the fragments were taken up by the clasmocytes or wandering endothelial cells. Clasmocytes containing fragments of red cells were found in the circulating blood, spleen and connective tissues. In the study of the process film preparations were made of rabbit's blood stained with dilute neutral red which were rapidly sealed to prevent crenation. These films were observed in a warm box. In watching fragmentation the authors noted that a red cell first puts out a long process and thereby assumes the appearance of a poikilocyte. The process vibrates, at first gently and then more actively and gradually becomes thinner and thinner at the point until separation takes place. Sometimes two or more processes form on a red cell at the same time. The writers consider the poikilocyte as the first stage in fragmentation and the microcyte in many instances as a red cell reduced in size after some of its cytoplasm has broken off. When an increase in fragmentation occurs, desquamated endothelial cells of the blood stream, as well as clasmocytes of the tissues, increase proportionately and take in the fragments. The difficulty of distinguishing between cells containing fragments of the red cells and eosinophile cells has been noted by some observers, but the present writers find that by supravital technique the distinction between these cells is easy. The eosinophile leucocyte of the rabbit has large oval granules and contains vacuoles, the fragments of the red cells have the colour of the haemoglobin of the surrounding cells. The eosinophile leucocyte has ameboid movement with streaming of the granules as the cell passes across the field. The clasmocyte moves very sluggishly and requires careful watching for the detection of any movement.

Friedländer's Bacillus.

LOUIS A. JULIANELLE (*Journal of Experimental Medicine*, July, 1926) reports the result of a study into the serological differentiation of Friedländer's bacillus. Difficulty had been encountered by other workers and were ascribed to the failure to obtain potent sera and to the interference of the capsule of the organisms with agglutination. The writer applied the principles governing the immunological relationships of pneumococci and concluded that in the case of Friedländer's bacillus, as with the pneumococcus, removal of the capsule either by hydrolysis or by cultural methods results in loss of specificity of the organism. With the necessity for the preservation of the capsule in mind the author studied thirty strains of

Friedländer's bacillus and he found that there exist among these three sharply defined and specific types and one heterogeneous group. In the thirty strains Type A occurred fifteen times, Type B six times, Type C three times and Group X six times. Agglutination, absorption, precipitin and other biological tests were used in the investigation and the types were proved to be highly specific by means of each of these tests.

The Smear Method in the Diagnosis of Hookworm Disease.

W. C. HAUSHEER AND C. A. HERRICK (*The American Journal of Hygiene*, July, 1926), conclude that the smear method is diagnostically accurate in hookworm disease if the infestation is such that five hundred or more ova are present per gramme of faeces. It will suffice for the examinations carried out by the general practitioner and no case that is missed, will be of clinical importance. If less than three hundred ova are present per gramme of faeces the smear method becomes highly inaccurate and one of the other methods must be employed. The writers, in conjunction with A. S. Pearse, present an analysis of the Willis flotation method and emphasize its efficacy. In their cases this method was found to be one hundred *per centum* diagnostically correct. They emphasize the necessity for careful estimation of the specific gravity of the salt solution employed in the test (it should reach 1130), the careful comminution of the specimen of faeces and the need for examination of the specimen being carried out within thirty minutes of its preparation.

The Dick Test in Scarlet Fever.

N. P. SHERWOOD AND L. BAUMGARTNER have conducted investigations in connexion with the Dick test for scarlet fever immunity (*The Journal of Immunology*, April, 1926). They applied the Dick test and estimated the agglutinating power of the serum with *Streptococcus scarlatinae* in one hundred and seventy-five students. Forty-four students gave a definite history of having had scarlet fever. In spite of the fact that G. F. and G. H. Dick claim that no person who had had scarlet fever reacted to the test, the authors obtained reactions in eleven members of this group or 25%. Two yielded a maximal reaction; in three there was intense redness and but slight or no induration. The serum of three of the eleven agglutinated the streptococci. The serum of eight of the remaining thirty-three in whom no reaction to the Dick test was obtained, also agglutinated the streptococci. There were one hundred and thirty-two students who stated that they had not had scarlatina. Forty-four reacted to the Dick test or 33.3%. Ten yielded a maximal reaction and twenty-one intense redness without induration. The serum of five of the forty-four reactors agglutinated the streptococci. Agglutination was

noted with the remainder. They point to the fact that 25% of the patients in scarlet fever have had further reactions. Some observed the effect of the toxic reaction. Forty-eight patients failed to react to the latex and having had scarlet fever. Twenty-one reacted both to the latex and to the toxoid. Five who were weaker to the extent that they also failed to react gave a good reaction to the toxin. Of the patients with scarlet fever, stronger reactions failed to react to the toxoid. In the weak patients, noted what in immunization injection of the toxin. This week.

Epidemic Scarlet Fever. ALTON CHAPIN (*Journal of Hygiene*, August, 1926) that for the past year all patients from scarlet fever have been seen. The longer the duration of the disease, the greater the severity of the disease. The author changes his opinion as to whether the disease is due to a decrease in the number of the infecting organisms. The actual number shows that the age in Provost to that cities. Six year old patients fifteen years of age precede the disease occurs in the first case fatality in the fourth year.

noted with the serum of twenty-three of the remaining eighty-eight students. They point out that an agglutination was obtained in 14·5% of the reactors to the Dick test as compared with 25·5% of the non-reactors. They regard this as evidence in favour of the assumption that *Streptococcus scarlatinae* has an aetiological significance in scarlet fever. N. P. Sherwood further records in the same journal some observations made to determine the effect of increasing the strength of the toxin dilution in the Dick test. Forty-eight students whose history failed to reveal a past attack of scarlatina and ten who gave a history of having had scarlatina, were tested. Twenty-one of the former failed to react both to a 1% and to a 2% dilution of toxin and ten reacted to both. Five who failed to react with the weaker toxin, reacted to a slight extent with the stronger and six who also failed to react with the weaker, gave a good reaction with the stronger toxin. Of the ten students who had had scarlet fever, five reacted well to the stronger dilution of toxin, but either failed to react or reacted very slightly to the weaker dilution. The author noted what appears to be an increase in immunity after the intradermal injection of the stronger dilution of toxin. This was not evident for several weeks.

HYGIENE.

Epidemiology of Scarlet Fever

ALTON S. POPE (*The American Journal of Hygiene*, May, 1926) points out that for forty years Dr. Charles Chapin has kept individual histories of all patients reported as suffering from scarlet fever reported in Providence. Because these reports give the longest accurate record of the morbidity of scarlet fever in an American city, special effort has been made on the author's part to determine what changes have taken place in the character of the disease during that time, whether morbidity is actually decreasing, whether the decline in mortality is due to a lower case fatality or to a decrease in the incidence of the disease or to both. He has considered the influences of age, sex and season upon the prevalence and fatality of the infection and has made an attempt to determine a possible correlation between the prevalence and the actual infectivity of the disease. He shows that on the basis of attack rates, the age distribution of scarlet fever in Providence corresponds very closely to that usually described in other cities. The greatest incidence is at six years, approximately 75% of all patients are under ten and 90% under fifteen years. The highest mortality precedes the mode of morbidity and occurs in the third year of life. This is explained by the distribution of case fatality which is highest in the first year and relatively low after the fourth year. In Providence 52% of

all deaths occurred in patients under five years and 80% among those under the age of ten. Attack rates show a slight excess among males up to the sixth year of life and at all ages above seven an excess among females. This apparent difference in the susceptibility probably depends upon two factors, namely a physiological difference in susceptibility of the sexes at different periods of life and increased exposure among females, especially in the higher age groups. For all ages the case fatality rates are about 20% higher among males. Case fatality fluctuates considerably from month to month, but shows no evidence of dependence on definite seasonal variation. There has been no appreciable change in the recorded morbidity in Providence or American cities as a whole in the past forty years. While the morbidity of scarlet fever has remained practically constant since 1885, the mortality rates have fallen from forty to two per hundred thousand. While scarlet fever was responsible for 5·3% of all deaths, it is now the recorded cause of only 0·4% of total deaths. The author points out that the evidence available goes to show that this decrease in mortality is due to a decrease in the malignancy of the disease, for there is no reason to assume that control measures have been appreciably responsible for this decline. In conclusion the author states that among 22,000 cases of scarlet fever, 271 were recorded as second attacks. It seems probable that this is an underestimation of the percentage of recurrence of scarlet fever in the individual. That one attack does confer a relative immunity is indicated by the fact that only 14% more cases were recorded among those who previously had the disease than among the general population. A definite preponderance of females in the higher age groups among recurrences is further evidence that infection with scarlet fever depends to a great extent upon the intimacy of contact with patients.

Prophylaxis in Industrial Lead Poisoning.

DAVID MCKAIL (*The Journal of Industrial Hygiene*, February, 1926) points out that cases of lead poisoning still occur in considerable numbers in spite of codes of regulations applying to lead industries. The mode of poisoning is now generally attributed to the inhalation of dust or fumes, although other ways cannot be wholly excluded. These dusts or fumes enter the system mainly by the alimentary tract. Reaching the stomach the lead is acted upon by the hydrochloric acid of the gastric juice, whereby it is rendered soluble and is absorbed unless protein food is being digested at the same time. In these circumstances only minute quantities of lead will be absorbed, the bulk of the poison being thrown out in the faeces. The problem therefore is to prevent access of dust or fumes to the air passages and mouth. Failing this, it will be neces-

sary to pursue the poison through the alimentary tract with the aim of neutralizing it there. Locally applied exhaust ventilation, so as to remove dust and fumes at the point of origin, is therefore the leading primary condition to be observed. Even when such ventilation is in use, maintenance of efficiency is demanded, as in the author's opinion continuous efficiency is the exception rather than the rule. The second consideration emphasized is scrupulous cleanliness of the hands, face, teeth and clothing, mouth washing and the need for an albuminous meal before starting work. The author points out that as regards the cleansing of the hands and mouth, that this in order to be carried out in a thoroughly efficient manner should be made compulsory and part of the ritual of the day's work placed under the management and supervision of a member of the staff. The author also recommends the washing out of the mouth by a soluble sulphate solution and the taking of Epsom salts twice a week on an empty stomach.

Industrial Ocular Injuries.

E. FUCHS (*Wiener Medizinische Wochenschrift*, March 6, 1926) states that injuries to the eyes comprise 8% of all industrial accidents. More than half of these are due to foreign bodies. He warns against the use of a pocket knife or toothpick by fellow workers to remove small splinters of metal. Though the foreign body may be removed, considerable injury is frequently done to the conjunctiva. In one series of a thousand workers more than half the men had to seek medical aid weekly for the removal of foreign bodies, while twenty-eight suffered definite impairment of vision and sixteen lost an eye. Stonemasons and quarrymen come next in frequency to metal workers. Owing to the use of dynamite for blasting, they run greater risks of more serious ocular injuries in both eyes. Less common are injuries following explosions in aerated water factories and laboratories. In non-perforating injuries abscess formation is more likely to occur with stone rather than with steel particles. If the eye be perforated to a considerable extent sight is lost in practically all cases. When a small perforation occurs, the outlook depends on question of infection and the chemical character of the foreign body. Infection leads sooner or later to the loss of the eye. If the foreign body be an indifferent substance, such as glass, it may lie in the eye for a long time without causing trouble. But chemically active substances, such as metal splinters, unless completely removed, will lead sooner or later to blindness. The author explains that in Austria there is no law compelling the use by workmen of protective goggles whilst working at dangerous trades. He makes a strong plea for his country to come into line with other European countries in this matter.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE SECTION OF OTO-RHINO-LARYNGOLOGY OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held on May 27, 1926, at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, Dr. A. J. BRADY in the chair.

Surgery of the Frontal Sinus.

DR. T. SPIERS KIRKLAND read a paper entitled: "Surgery of the Frontal Sinus" (see page 313).

DR. GARNET HALLORAN asked Dr. Kirkland for an expression of opinion in regard to the precise indications for surgical interference in frontal sinus disease.

DR. R. S. GODSALL said that during the years 1906 to 1910 the external frontal sinus operation had largely gone out of fashion owing to the heavy mortality from post-operative osteomyelitis. He considered that removal of the anterior wall with its large blood spaces was extremely dangerous, particularly if followed by closure of the wound. It was his custom, therefore, to attack the frontal sinus through the inferior wall, leaving the anterior wall absolutely intact. The subsequent treatment of the wound by the open method eradicated mortality as far as uncomplicated cases were concerned. The removal of every particle of diseased mucous lining of the frontal and the complete cleaning out of any diseased ethmoidal and sphenoidal cells was absolutely necessary.

Dr. Kirkland in replying to Dr. Halloran on the precise indications for interference or for withholding operation, said that these could not be given categorically, but it might be said that a patient presenting no gross lesion in the nose beyond the presence of pus could be treated by expectant methods. When polypi and hypertrophic conditions were present the surgeon was faced with a condition which had been of long duration and which demanded some form of surgical attack. It might be the removal of an hypertrophied middle turbinate, together with the polypi for the purpose of securing free drainage and then awaiting events.

Tuberculosis of the Larynx.

DR. RICHARD FRANCIS showed a male patient, aged twenty-seven, who had been admitted to hospital on January 13, 1926, complaining of dysphagia, dyspnoea, hoarseness, cough with expectoration disturbing sleep and anorexia for the previous six months. When on active service the patient had had frequent colds with hoarseness lasting for weeks and had also been slightly gassed. He had lost 16.6 kilograms (two stone nine pounds) in weight since the war and most noticeably during the previous seven months. Examination had revealed considerable general debility. The larynx had manifested extreme oedema and ulceration of the whole of the larynx and epiglottis with profuse purulent exudate. No tubercle bacilli had been found on examination of the sputum on three occasions. Clinical and X ray examinations of the chest had failed to reveal signs of tuberculosis. An indefinite response had been obtained to the Wassermann test on three occasions. The response to Kahn's test was positive. The patient after these examinations had been put on potassium iodide and had been taking two grammes (thirty grains) a day for ten days, when he developed urgent dyspnoea. On February 27, 1926, an urgent tracheotomy had been performed under local anaesthetic for partial asphyxia. Convalescence had been slow but uneventful and patient had gained 3.6 kilograms (eight pounds) in weight and was improved in general health, but the laryngeal condition appeared stationary. The tracheotomy tube was still *in situ* and adequate respiration was still impossible without it. The patient had had four injections of "Novarsenobillon" in the previous month; these were being continued until six had been given. When patient's condition warranted it, a snipping would be taken from the involved area for pathological investigation.

At the meeting complete inspection of the larynx was impossible owing to the swollen and overhanging epiglottis.

Members, however, almost unanimously agreed that the lesion clinically suggested a tuberculous rather than luetic origin. Further, it was thought that a pathological examination of a snipping would probably be invaluable in the making of a diagnosis.

Medical Societies.

THE MELBOURNE HOSPITAL CLINICAL SOCIETY.

A MEETING OF THE MELBOURNE HOSPITAL CLINICAL SOCIETY was held at the Melbourne Hospital on July 30, 1926, MR. ALAN NEWTON in the chair.

Lumbo-Sacral Subluxation.

MR. C. LITTLEJOHN showed a male patient, aged nineteen years, who had fallen on the lower part of his back two months previously. On the day of the accident he had been able to go to work, but on the following day the back had been very stiff and he had complained of pain over the sacrum, the left buttock and the anterior aspect of the left thigh. Examination revealed loss of normal lumbar lordosis, an abnormally horizontal sacrum and anterior displacement of the fifth lumbar vertebra. X ray examination had confirmed the lumbosacral subluxation, the amount of displacement being about six millimetres (one-quarter of an inch). There was no change in the relationship between the fourth and fifth lumbar vertebrae. Mr. Littlejohn said that he proposed to perform a Hibbs's vertebral fixation.

Elephantiasis of the Right Leg and Foot.

Mr. Littlejohn's second patient was a female, aged thirty, who for the past ten years had noticed a gradually increasing swelling of the right leg and foot. There was no history of lymphangitis or filaria and an examination of the blood had shown no evidence of the latter condition. There had been no inflammation or enlargement of the glands in the groin and no abnormality had been detected in the pelvis. The swelling had pitted slightly on pressure and the skin showed the "orange skin" appearance frequently seen in lymphatic obstruction. The calf of the right leg had measured 57.5 centimetres (twenty-three inches) in circumference. Three weeks previously a Rodgers Condoleon operation had been performed, two longitudinal incisions having been made along the inner and outer aspects of the leg and foot and the subcutaneous tissue and deep fascia had been removed for a distance of about five centimetres (two inches) on both sides of the incisions. In performing the operation Mr. Littlejohn had noticed that there was definite dilatation and cyst formation in the lymphatic vessels. The swelling had gone down considerably and the calf at the time of demonstration was only 42.5 centimetres (seventeen inches) in circumference, although there was still some lymphatic oedema on the foot and the ventral and dorsal aspects of the leg. Mr. Littlejohn pointed out that as a result of the operation it was hoped that the lymph would be able to drain into the deep lymphatics which were usually not affected.

Parotid Tumour.

MR. ALAN NEWTON showed a female patient, aged fifty-five years, who eight years previously had noticed a swelling about the size of a bantam's egg in front of the left ear. This had been removed two years later at a country hospital. Six weeks before the meeting, after an attack of influenza, she had found that the swelling had returned. There was no pain or disability. On examination the scar of the former operation was visible and beneath this there was a hard nodular swelling of the whole parotid gland, adherent to the skin but not to the deeper structures of the neck. Mr. Newton regarded the condition as a mixed tumour of the parotid and asked for a discussion on the pathology and treatment.

MR. HAROLD DEW said that he regarded the condition as being teratoid and not a teratoma, that is arising from a

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multipotent and not a totipotent cell. He was of the opinion that, if operated on, the whole gland should be removed and instanced several patients who had been made worse by local removal.

MR. C. H. C. SEARBY said that mixed tumours of the parotid were quite different to adenomata and carcinomata of the gland which behaved like similar tumours elsewhere. They frequently remained stationary for about ten years and then grew rapidly. Lymphatic glands were not involved until a late stage, but if operated on they tended to recur with glandular enlargement. Virchow had described them as carcinomata, the cartilaginous and mucoid areas arising by metaplasia. Cohnheim regarded them as arising from embryonic rests and then for many years they were looked on as endotheliomata. The evidence that they were teratomata was not sufficient, as no other tissues but the glandular, mucoid and cartilaginous had been observed. Ewing was of the opinion that some of them arose from the basal cells of the acini or ducts and under the influence of mucin metaplasia took place; the remainder were derived from branchial remains. He would advise radium treatment.

MR. VICTOR HURLEY said that he would advise radium treatment for three months and that if this were not successful the growth should be removed.

DR. LESLIE HURLEY said that it was difficult to understand how cartilage and mucoid tissue could arise by metaplasia from epiblastic epithelium.

Functional Talipes Equino-Varus.

Mr. Newton's second patient was a male, aged thirty-three. In January, 1926, a large girder had fallen a distance of sixty centimetres (two feet) on to his right foot. X ray examination had revealed a small fissured fracture of the dorsal surface of the internal cuneiform bone. The patient had been treated at the hospital for a period of nine weeks and then discharged. He had since been treated by massage at the direction of the insurance company and stated that the contraction present had steadily progressed during this time. Mr. Newton pointed out that the patient had a definite *talipes equino-varus*. X ray examination revealed no bony abnormality, there was no muscular wasting or paralysis and there was no sensory loss. Examination of the nervous system revealed generally increased reflexes, but nothing else abnormal was detected. He regarded the condition as being functional and asked for suggestions with regard to treatment and for the experience of members as to their success in treating such contractures.

DR. S. O. COWEN said that he had been present when the patient had been given a general anaesthetic and that even when deeply anaesthetized as evidenced by dilated pupils and absent corneal reflexes, the contracture had persisted and that there was a well marked though variable ankle clonus. This in his opinion was most unusual in a functional contracture.

DR. H. MAUDSLEY said that he had seen a case of functional contracture affecting the fingers of one hand which had been cured by long continued persuasion and suggestion. He emphasized the necessity of prolonged treatment and the liability to relapse.

Enlargement of Both Parotid Glands.

DR. F. B. LAWTON showed a male patient, aged thirty-one, who, on April 16, 1926, had complained of pain in the region of the left parotid gland. This had been followed shortly afterwards by swelling of the gland and a few days later the right parotid gland had become similarly affected. He had also noticed a slight soreness of the throat and pain on attempted opening of the mouth. The condition had first been regarded as epidemic parotitis, but the persistence of the swelling had led to a reconsideration of the diagnosis. On examination both parotid glands had been considerably enlarged, hard and slightly tender. There had also been slight enlargement of the other salivary glands and of the lymph glands in the neck and axillæ. In the previous few weeks there had been slight diminution in size of all the glands. A culture taken

from the tonsils had yielded staphylococci and streptococci. An examination of the right ear had revealed a marginal postero-superior perforation of the drum with granulations over the *aditus* and a chronic mastoiditis. X ray examination of the glands revealed nothing abnormal. The Wassermann test had yielded no reaction and a complete blood examination revealed nothing beyond a slight grade of secondary anaemia. The patient was exhibited for suggestions with regard to diagnosis.

DR. S. O. COWEN said that the case might be one of Mikulicz's disease, although there was no enlargement of the lachrymal glands and no leucämic changes in the blood were present. Both of these were frequently seen in Mikulicz's disease.

DR. L. E. HURLEY said that in his opinion the original diagnosis of epidemic parotitis was probably correct. Persistent enlargement of the parotids, though not common, was occasionally seen.

MR. HAROLD DEW expressed the same view.

Aneurysm of the Descending Aortic Arch.

DR. S. O. COWEN showed a male patient, aged fifty-five, who for the previous three months had been complaining of pain over the left lower ribs. There was no cough, the appetite was good and there was no loss of weight. For the past twenty years he had passed urine three times at night. On examination of the heart the apex beat was in the fifth space ten centimetres (four inches) from the middle line, there was one finger's breadth of heart dulness on the right side and the aortic second sound was accentuated. In the left interscapular region there was slight impairment of the percussion note and diminution of the vesicular murmur, vocal resonance and vocal fremitus. There was no tracheal tug. The left shoulder was slightly lower than the right and the left lung did not move quite so well as the right. In the right parotid region there was a small hard tumour which was freely movable and not attached to skin or deeper structures. On the left lower lip there was a small ulcer about the size of a shilling with sharp edges, irregular in outline, and with an indurated margin. It had been present for the previous twenty years. The Wassermann test yielded a strong reaction and X ray examination revealed a wide shadow in the upper third of the posterior mediastinum, continuous with the aortic shadow. Dr. Cowen asked for an expression of opinion as to the advisability of giving "Salvarsan" and whether it would be wise to recommend the patient to apply for an invalid pension. He also asked for a discussion as to the nature of the ulcer on the lip and the tumour in the parotid region, both of which he regarded as gummatæ.

DR. HUME TURNBULL advised rest, big doses of iodide of potash and injections of "Arsenobenzol" followed by a course of bismuth. Patients with aneurysm treated with "Arsenobenzol" had done better than those treated without. Ordinary doses of "Arsenobenzol" could be given without undue risk, provided the patient was carefully watched. He thought that if satisfactory improvement resulted from treatment the patient would be able to resume work.

MR. VICTOR HURLEY said that in his opinion the tumour in the parotid region was a mixed parotid tumour and that the ulcer on the lip was carcinomatous.

MR. HAROLD DEW was of the opinion that the ulcer on the lip was an epithelioma, supervening on a gumma.

Hydatid of the Liver and Acute Cholecystitis.

MR. VICTOR HURLEY showed a specimen from a male patient, aged nineteen years, who had been admitted to hospital on July 11, 1926. For the previous twelve months he had suffered from flatulence after food. Fourteen days before admission he had noticed a sense of oppression in the chest and seven days later pain in the right side of the chest which soon passed down to the right side of the abdomen, with anorexia for the same period. Twenty-four hours before admission he had developed severe colicky pain in the right side of the upper part of the abdomen which was relieved by vomiting. There had been no rigors or shivering. The bowels had not been open for forty-

eight hours. On examination the tongue had been furred, the breath was foul and there was slight jaundice. The temperature had been 37.2° C. (99° F.), the pulse rate 84 and the respiration rate 24 in the minute. There had been tenderness and rigidity in the gall bladder region and the liver was two fingers' breadth below the costal margin. The urine had had a specific gravity of 1030, was acid and contained no albumin, sugar or bile. The Van den Bergh test had given a prompt direct reaction and the result of the Fouquet test was positive. The urinary diastase was 15 units. X ray examination of the gall bladder had revealed no abnormality and nothing abnormal was detected in the chest. No reaction had occurred to either the Wassermann or Casoni tests, but the blood had yielded a reaction to the complement fixation test for hydatid. On July 23 the abdomen had been opened and about thirty cubic centimetres (one ounce) of clear fluid had escaped. The gall bladder was enlarged, tense and inflamed and on its incision dark bile of treacly consistency had escaped. The mucosa had presented a strawberry appearance. A large drain tube had been passed into the gall bladder and had been sutured in position by two purse string sutures. In the right lobe of the liver there had been a hydatid cyst which on being opened was found to contain numerous daughter cysts and bile-stained fluid. The cyst was evacuated, swabbed out with "Formalin" gauze and then closed. The gall bladder contents on culture had yielded no growth, but *Streptococcus longus* had been found in the smear. The day after operation the Casoni test had yielded an immediate reaction both with stock fluid and with fluid from the patient's hydatid. Following operation the patient's condition had given no cause for anxiety till July 27, when signs and symptoms of general peritonitis developed. The abdomen had again been opened through a lower mid-line incision and large quantities of bile-stained purulent fluid had been removed. The peritoneal cavity had been drained. An examination of the fluid revealed streptococci and colon bacilli. The patient was improving. Mr. Hurley said that cholecystitis was not common at the age of nineteen. In view of the fact that a hydatid cyst might give symptoms simulating closely gall bladder disease, he always as a routine had a Casoni test done. It was interesting to notice that in this patient both conditions had been present and that the Casoni reaction, although absent before operation, had been present afterwards.

Mr. HAROLD DEW pointed out that it was quite common for hydatid cysts to rupture into the biliary passages. In about 55% of such cases the rupture took place into the ducts of the right lobe, in about 30% into the left lobe, in 6% into the gall bladder and in about the same number into the extrahepatic ducts. The passage of the small cysts or pieces of membrane through the biliary passages was responsible for the frequent attacks of colic and in some cases the common bile duct became temporarily blocked thus interfering with the flow of bile and facilitating infection in the gall bladder, usually due to streptococci. If a hydatid cyst contained bile, drainage should be provided to protect the peritoneal cavity.

Gumma of the Femur with Spontaneous Fracture.

Dr. ETHEL OSBOURNE showed a female patient, aged forty-three years. She said that in May, 1918, the patient had tripped on a stone and found that she could not use her left leg. She had been in hospital from May 17, 1918, to July 17, 1918. At that time there had been considerable eversion of the left leg, two and a half centimetres (one inch) of shortening and crepitus just below the trochanter. X ray examination had revealed an impacted Y-shaped fracture of the neck of the left femur in good position, but with some shortening and erosion. After leaving hospital the patient had used crutches for about six months and then was able to walk with a raised boot. She had had no further trouble till January, 1926, when on slight twisting of the right leg she heard a crack, felt sharp pain in the right hip and had found that she could not walk. She had been treated privately in bed for one month and afterwards had walked with crutches but with slight constant pain. She had attended hospital in May, 1926. On examination the pupils were unequal in size,

irregular in shape and did not react to light. The knee jerks and superficial reflexes were absent, there was diminished tenderness on pressure over the *tendo Achillis* and the Wassermann test yielded a strongly positive result. The X ray specialist reported "Osteo-sarcoma of the upper third of the right femur, with pathological fracture of the neck." Dr. Osborne regarded the condition as being a gumma with spontaneous fracture.

Mr. VICTOR HURLEY said that in his opinion the patient was a tabetic with spontaneous fractures in both femora. He had never seen a gumma in the femur.

Early Paranoia.

DR. H. F. MAUDSLEY showed a male patient, aged forty-five years, by occupation a labourer. The family and past history were normal. The patient's present illness could be traced back as far as two years previously. He had at that time been doing piece work and there thus arose some hostility between him and his fellow workers. He had then begun to develop ideas that they were always talking about him and sneering at him. This to a certain extent might have been true. He had then begun to have definite delusions that his enemies' spies could hear all his conversation, even when he was in his own home and that remarks were being made about him in the street. His delusions had become systematized in that he could explain in great detail how his enemies could hear him and knew exactly what he was doing. He had had no hallucinations. He said that he would "do for his enemies" if it were not for the consequences to his family. Dr. Maudsley pointed out that there were many forms of paranoid insanity, but that true paranoia was a somewhat rare condition. The problem as to what to do with this patient was a very real one. If his confidence could be gained he might be amenable to out-patient treatment and thus be of economic value to the State. It must be admitted, however, that he was a potential homicide although his contact with the realities of life was not likely to lead to such tendencies. The ultimate prognosis was bad, although he might be kept *in statu quo* for some years.

DR. R. S. ELLERY agreed with the diagnosis of early paranoia and stressed the importance of distinguishing it from other forms of mental disease with paranoid tendencies. In true paranoia the delusions were stabilized, well systematized and showed apparent logic. There were no auditory or visual hallucinations and no alteration in the emotional and intellectual spheres. The prognosis was bad and the patient must be looked upon as a potential homicide.

Correspondence.

OCCIPITO-POSTERIOR POSITIONS.

SIR: I was very interested to read Dr. James C. Hughes's letter of July 31, 1926, on occipito-posterior positions in which he so strongly advocates turning by forceps (Scanzoni's manœuvre) in preference to the method of manual rotation. He says it seems to him that it is not quite fair or logical for me to condemn the method without a trial.

Now rotation by forceps has been known since the year 1720, but it has never become popular with British obstetricians and is not considered so good as manual rotation by such an authority as Herman. It is condemned by Munro Kerr, Berkeley, Bonney, de Lee and the Rotunda school.

Australian authorities such as Dr. S. H. MacCulloch, Dr. Fourness Barrington strongly condemn it; Professor Windeyer does not advocate it.

Furthermore, Williams whom Dr. Hughes quotes, states: "When occipito-posterior presentations have descended into the pelvis, it is my practice to leave them to Nature as long as possible and to interfere only when absolutely necessary. The double application of forceps which was recommended by Scanzoni many years ago, has given

such excellent results in my hands that I employ it to the exclusion of all other methods, when the occiput cannot be rotated manually from its obliquely posterior position.

"It, however, is rarely necessary and in my service is employed in only about one per cent. of all obliquely posterior occipital presentations." The italics are mine.

There is by no means unanimity among the advocates of Scanzoni's manœuvre as to the actual technique of the manœuvre. Dr. Hughes and others consider it most important to push the head up to the pelvic brim first; but in some recent papers this is condemned and it is urged that rotation should be done in the plane in which the head lies at the time. Others say on no account should rotation be done until the head is on the pelvic floor.

Williams does not advocate pushing the head up to the brim. He rotates with the forceps only when the head is on the pelvic floor.

Dr. Hughes is to be congratulated that none of his cases have shown any morbidity.

Statistics published in *The American Journal of Obstetrics and Gynecology* some months ago showed a maternal morbidity of 30% with the Scanzoni manœuvre which was definitely higher than the other methods employed. All writers agree that there is great risk of damaging the maternal soft parts unless very great care is taken. I have seen so many cases of pelvic discomfort in my out-patient department, due to scar tissue in the vaginal vault after forceps delivery that it has made me hesitate to adopt a method which admittedly carries this risk. It is for these reasons that I think this method is not one to be advocated for general use. My plea is that the position should be recognized about the thirty-sixth week and efforts made to convert it into an anterior one.

It is interesting to note that in *The British Medical Journal* of June 19, 1926, Haultain found that at the antenatal clinic of the Simpson Memorial and Royal Maternity Hospital, Edinburgh, in a series of seventy consecutive occipito-posterior cases in which pads, as described by Buist, were applied, 82.8% became changed into anterior positions. While I am quite prepared to admit that in Dr. Hughes's hands forceps rotation gives him better results than manual rotation, yet I am equally sure that, if other men less skilled in this manœuvre adopt it and examine their patients two months later, they will be surprised to find how many have scar tissue in the vaginal vault.

Yours, etc.,

ALFRED J. GIBSON, M.B., Ch.M.

135, Macquarie Street, Sydney.
August 18, 1926.

COMPENSATION AND INJURY TO THE BACK.

SIR: Under the heading "Compensation and Injury to the Back" appears a letter in the issue of August 21 last by Dr. Samuelson, with whom I am much in sympathy in the matter of the difficulty of finding any trauma in the majority of cases of so-called "strained" muscles or ligaments in the lumbar region. In cases of malingering it is this condition which is frequently chosen and it is the one almost more than any other that baffles the practitioner as to the exact nature of the trouble. There is no doubt that alcohol exaggerates the condition, if it does not often actually cause it, especially if associated with cold and wet surroundings in men addicted to drink. I look upon it as a fibrosis involving the nerve sheaths and often associated with true rheumatism of the lumbar muscles. The characteristic attitude of the back bent at the lumbo-sacral joint being the position of greatest ease, is the position assumed; the movement to the upright position by putting the inflamed muscles and ligaments on the stretch causes acute pain. All this can be easily simulated by the malingerer and as pain is the only symptom complained of in the majority of genuine cases,

there being no objective signs whatever, one has to fall back on the effects of treatment and the general demeanour of the patient before deciding on its genuineness or otherwise. When in the Railway Department as Resident Medical Officer supervising the construction camps, this condition of "muscular strain" was of frequent occurrence. My plan was to give a medical certificate for three or four days with appropriate treatment, usually a liniment to be rubbed in or a plaster applied, but at the end of this time if the patient persisted that it was no better or only slightly relieved, to give another two days with continuance of the treatment and if after this time no decided benefit was admitted order him light work on the plea that it would improve as a better circulation was established by movement of the muscles and structures concerned. By this method I generally had them back at their accustomed work in a few days. Saline aperients in the form of magnesium or sodium sulphate in large doses undoubtedly is a great help by eliminating toxic products from the system.

A man may have been drinking heavily at the week-end and perhaps not in a sober enough condition to get to his camp and lies out all night in the cold, with the result that he suffers from genuine lumbago before morning. If he can get to work for half an hour and then give up on the plea of having strained his back, one had to give him the benefit of the doubt in the absence of proof to the contrary and he would thus get his certificate and pay for injury sustained at work. These were difficult cases to decide.

Yours, etc.,

E. C. CHISHOLM.

Comboyne.

August 21, 1926.

"OMNADIN" IN PNEUMONIA.

SIR: I notice that Dr. Montgomerie Paton has been using antidiphtheritic serum orally as a useful means of combating septic processes, toxæmias *et cetera*. Other practitioners have been using it with good results, but no mention of its use in pneumonic influenza has been mentioned, which I regard as a grave and serious malady.

During the past eight weeks I have had a great many cases of pneumonic influenza under my care and I use the term pneumonic influenza without dogmatism, as all my cases who showed the classical signs of influenza with the signs of catastrophic lesions in the lungs as evinced by haemorrhagic and rusty sputa, cyanotic mottling and other signs of a grave toxæmia, I labelled accordingly.

I hesitated to use antidiphtheritic serum and indeed the Health Department's pneumonic influenza vaccine which had served me so well in previous outbreaks. My choice fell on "Omnadin" which I injected intramuscularly.

Its effects were striking, within twenty-four hours a crisis occurred with rapid clearing of the lung lesions and an extraordinary sense of well being was conferred in each case.

In future I shall rely on "Omnadin" in any subject seriously ill from any septic process whatsoever.

Yours, etc.,

ARTHUR WATKINS.

Griffith, New South Wales.

July 30, 1926.

SEPTIC TONSILS?

SIR: With the remarks so clearly expressed by Dr. Watkins in the journal of the 7th instant I strong concur, more especially where he treats of adenoids and the resulting mouth breathing. To wait till there is impairment of hearing is bad surgery and often ends in failure and at best cannot be compared with the cure of the mouth breathing before any dulness of the hearing has

occurred. By the way, many throat specialists would get much better results, if more attention were paid to the reeducation of their patients to breathe properly after operation, but this remark is outside the question at issue.

Unfortunately Dr. Watkins has given scanty notice to the cases mentioned by me. Some of the cases seen by me which have been diagnosed as septic tonsils by men of repute, seemed to have very little or anything wrong with them and a few, as I have already said, have made me wonder what constitutes a septic tonsil. I have seen several tonsils labelled septic which contained no pus and where there was no history of quinsy or other acute throat trouble. These tonsils were condemned, failing which dreadful things would occur. I shall feel very much obliged therefore if Drs. Murphy or Watkins or any other throat specialist can find time to answer the following questions.

1. Clearly define and explain what constitutes a septic tonsil.

2. When should these cases be operated on? Amongst those I include tonsils which are looked on as suspicious in thyroid troubles. The rule in such it seems to me is, though they are healthy at present they possibly may be septic next week, therefore get rid of them. In such I blame the advising physician more than the operator, as naturally a young surgeon does not care to oppose the opinion of one who has had more medical experience than himself.

Awaiting Dr. Watkins's reply with interest and to save a reply of thanks and the valuable space of this journal I now embrace this opportunity of thanking him in advance for any trouble he may take in answering my questions in the clear crisp English of which he is a master.

Yours, etc.,

A STEWART,

Tuberculosis Officer and Government Referee.
Queen Street, Brisbane.
August 8, 1926.

Books Received.

POLITZER'S TEXTBOOK OF THE DISEASES OF THE EAR FOR STUDENTS AND PRACTITIONERS, by Milton J. Ballin, M.D., Ph.B.; 1926. London: Baillière, Tindall and Cox. Demy 8vo, pp. 789, with 302 illustrations in the text. Price: 31s. 6d. net.

THE HOUSE SURGEON'S VADE-MECUM, by Russell Howard, C.B.E., M.B., M.S. (Lond.), F.R.C.S. (Eng.), and Alan Ferry, M.B., M.S. (Lond.), F.R.C.S. (Eng.); 1926. London: Edward Arnold & Co. Crown 8vo, pp. 528, illustrated. Price: 12s. 6d. net.

Medical Appointments.

Professor T. Brailsford Robertson has been appointed Chairman of the new State Advisory Committee for South Australia of the Federal Council of Scientific and Industrial Research.

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Dr. Malcolm Frizell (B.M.A.) has been appointed Honorary Radiographer to the Royal South Sydney Hospital.

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Dr. Leonard Ross Mallen (B.M.A.) has been appointed a Resident Medical Officer at the Adelaide Hospital.

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Our attention has been directed to an error in the announcement concerning the medical staff of the New South Wales Government Railways and Tramways. Dr. T. L. O'Reilly has succeeded Dr. George Henry Taylor as Chief Medical Officer, Dr. B. Foulds has been appointed to fill Dr. O'Reilly's place of Chief Assistant Medical Officer, while Dr. M. R. Finlayson will fill Dr. Foulds's position and Dr. Hugh Morris Taylor has procured the newly created position.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.I.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND: Hon- orary Secretary B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital. Cook District Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Ceduna, Wudinna (Central Eyre's Peninsula), Murat Bay and other West Coast of South Australia Districts.
WESTERN AUSTRALIAN: Honorary Secretary, Sain't George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVI- SION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

SEPT. 7.—Tasmanian Branch, B.M.A.: Council.
SEPT. 8.—New South Wales Branch, B.M.A.: Nomination of Candidates for Federal Committee.
SEPT. 9.—Victorian Branch, B.M.A.: Council.
SEPT. 9.—New South Wales Branch, B.M.A.: Clinical Meeting.
SEPT. 10.—Queensland Branch, B.M.A.: Council.
SEPT. 10.—Central Southern Medical Association, New South Wales.
SEPT. 14.—Tasmanian Branch, B.M.A.: Branch.
SEPT. 14.—New South Wales Branch, B.M.A.: Ethics Committee.
SEPT. 14.—Section of Medicine, New South Wales Branch, B.M.A.
SEPT. 15.—Western Australian Branch, B.M.A.: Branch.
SEPT. 15.—Central Northern Medical Association, New South Wales.
SEPT. 15.—South Sydney Medical Association, New South Wales.
SEPT. 15.—Section of Obstetrics and Gynaecology, New South Wales Branch, B.M.A.
SEPT. 20.—New South Wales Branch, B.M.A.: Organization and Science Committee.
SEPT. 21.—Tasmanian Branch, B.M.A.: Council.
SEPT. 21.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Editorial Notices.

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